# PRICE-ANDERSON ACT

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# HEARING

BEFORE THE

## SUBCOMMITTEE ON ENERGY RESEARCH AND PRODUCTION

OF THE

## COMMITTEE ON SCIENCE AND TECHNOLOGY U.S. HOUSE OF REPRESENTATIVES

NINETY-SEVENTH CONGRESS

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# CONTENTS

## WITNESSES

September 15, 1981: Page
- Hon. Ted Weiss, a Representative in the Congress of the United States from the 20th District of the State of New York 3
- Kenneth Davis, Deputy Secretary of Energy, accompanied by Tenney Johnson, General Counsel, U.S. Department of Energy 14
- J. Dexter Peach, Director, Energy and Minerals Division, U.S. General Accounting Office, accompanied by John Harman, Group Director, and Cliff Fowler, supervisory evaluator 80
- Sam Iacobellis, president, Energy Systems Group, Rockwell International. 87

## APPENDIX

General Accounting Office report, EMD 81-111, prepared for release at the hearing at the request of the Honorable Marilyn L. Bouquard, chairman of the Subcommittee on Energy Research and Production of the Committee on Science and Technology 95

# PRICE-ANDERSON ACT

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## TUESDAY, SEPTEMBER 15, 1981

House of Representatives,
Committee on Science and Technology,
Subcommittee on Energy Research and Production,
*Washington, D.C.*

The subcommittee met at 2:18 p.m. in room 2325, Rayburn House Office Building, Hon. Marilyn Lloyd Bouquard, chairman of the subcommittee, presiding.

Present: Representatives Bouquard, Volkmer, and Winn.

Also present: Representative Vin Weber.

Staff present: Louis Ventre, counsel; A. Lee Wallace III, minority energy director.

Mrs. **Bouquard**. The subcommittee will come to order.

Good afternoon, ladies and gentlemen. The subject of our hearing is the Price-Anderson Act and its impact on nuclear research and development.

The Price-Anderson Act was originally enacted in 1957 to accomplish two primary purposes, which remain relevant today. The first is to assure the public that a significant fund of money is available to pay for damages in the event of a serious nuclear accident. The second purpose is to encourage the development and use of nuclear energy by reasonably limiting the liability of private entities for such damages.

Essentially, the Government, through the Department of Energy and the Nuclear Regulatory Commission, can offer a kind of insurance to entities under their jurisdiction. For the Department of Energy, these entities are the contractors which operate the Government's nuclear facilities and the amount of that insurance and limit on liability is $500 million. For the Nuclear Regulatory Commission, the entities are licensees, many of whom are utilities which operate commercial nuclear powerplants. The amount of Government insurance and limit on liability for commercial powerplants is $500 million plus up to $60 million of private insurance, or $560 million.

There are distinct differences between the coverages provided to utilities and the coverages provided to the Government's contractors. For utilities, a complex layer of private insurance and assessments against all powerplant owners works to reduce the Government's actual financial commitment in the event of an accident. For the DOE's contractors, no private insurance or assessments are made since the Government would eventually bear these costs as a charge from the contractor.

Our hearing today will focus only on the impact of the Price-Anderson Act on Department of Energy facilities. We will therefore not consider the impact of the act on commercial nuclear powerplants.

We hope to be able to clarify the record on the extent of the use of the Price-Anderson Act by the Department of Energy, the importance of retaining DOE's legal authority to offer Price-Anderson Act coverage to its contractors, and the advisability and merits of updating the provisions, should continued coverage be warranted.

I would only note with respect to the need to update this act that it has been revised eight times since its enactment; the last time was 6 years ago in 1975.

We are fortunate today to have with us a group of very distinguished witnesses who can share with us some of their special insight on this subject. Our first witness will be a colleague of ours in the House, the Honorable Ted Weiss from the 20th District of New York. He is the sponsor of several bills in the House on the Price-Anderson Act, the most recent being H.R. 3915, which was introduced on June 11, 1981.

Next we will hear from Mr. Ken Davis who is the Deputy Secretary of Energy. This will be the subcommittee's first opportunity to officially welcome Mr. Davis into his new job. I do note for the record that we have had the benefit of Mr. Davis' advice a number of times in past hearings before this subcommittee in his previous capacity as vice president of Bechtel Power Corp.

Then we have Mr. Dexter Peach, who is Director of the Energy and Minerals Division of the General Accounting Office. He will present testimony and release a new report prepared at my request on the Price-Anderson Act. Mr. Peach is also an old friend whom we are pleased to welcome back before us today.

And our fourth witness will be another friend and veteran of our past subcommittee hearings, Mr. Sam Iacobellis, who is president of the energy systems group at Rockwell International. Mr. Iacobellis, last before us in March of this year testifying on DOE's breeder programs, will share with us the contractors' perspective on the value of the Price-Anderson Act.

We do extend our warmest welcome to you gentlemen. But before we begin I would like to recognize the ranking Republican member of the Science and Technology Committee, Mr. Winn, for any opening remarks that he might have.

Mr. Winn.

Mr. WINN. I want to thank you, Madam Chairman, for recognizing me and for calling these hearings on the impact of the Price-Anderson Act on the research and development facilities of the DOE.

This is an important topic, which we are wise to examine before a nuclear incident occurs at any one of the facilities under the jurisdiction of this committee.

Contrary to popular belief, the Price-Anderson Act deals predominantly with DOE-owned facilities rather than with commercial nuclear powerplants licensed by the NRC.

The act covers 178 NRC-licensed facilities as compared to 280 DOE-owned facilities. The DOE facilities are used for both defense purposes and research and development purposes. Therefore any legislation amending the Price-Anderson Act would have a predominant effect on these DOE defense and research and development facilities.

There is at this present time legislation under active consideration by the Interior Committee, H.R. 3809, as introduced by Mr. Udall on June 4 of this year.

The sections dealing with the Price-Anderson would increase the limit of liability for a DOE contractor from $500 million to $5 billion. DOE's present policy is to not require its nuclear contractors to carry any additional financial protection beyond the $500 million provided for in the act, since the cost of private insurance would generally be paid for by DOE as a reimbursable cost. Therefore, any increase in the limitation of liability could significantly affect the DOE budget.

I hope that this committee will carefully examine any such proposal before enacting it.

One of the primary issues raised by the proposed legislation is whether or not $5 billion limitation is an accurate reflection of the limitations of liability. This figure can be arrived at by a simple mathematical extrapolation of the $500 million limitation of liability adopted in the 1957 act. However, it should be remembered that this figure was adopted without the benefit of knowing the actual costs of a nuclear accident.

In 1957 there was little experience to indicate what these costs would be. We have a much greater volume of data available to us now in 1981.

I also wanted to commend you, Madam Chairman, and the General Accounting Office on its report which is being presented to us here today. The report has raised several very important issues with regard to the Price-Anderson Act.

I hope to also explore other issues which have not been fully discussed.

One, what would be the effect of the limitation of liability where there were multiple nuclear accidents? for example, at a site such as the Hanford reservation.

Two, how does the act treat facilities licensed for education purposes? Section 170(k) of the Atomic Energy Act.

And three, how does the act treat nuclear occurrences which occur outside of the United States? Section 170(e) of the Atomic Energy Act

Thank you, Madam Chairman.

Mrs. **Bouquard**. Thank you very much, Mr. Winn.

Mr. Weiss, we extended our welcome to you before you arrived, so again we welcome you to our subcommittee.

As you know, you may summarize your remarks or proceed as you wish. Without objection your complete formal remarks will be inserted in the record.

## STATEMENT OF HON. TED WEISS, A REPRESENTATIVE IN THE CONGRESS FROM THE 20TH DISTRICT OF NEW YORK

Mr. **Weiss**. Thank you very much, Madam Chairwoman and members of the subcommittee.

I will just summarize my comments. I want to express my appreciation to you and to the subcommittee for commissioning the GAO report and to compliment the GAO on the report that it has filed and submitted to you.

The thrust of my comments are aimed at underscoring the concern that the GAO, and I think everyone else, has in respect to the risk to which American citizens may be put by not having sufficient opportunity for being compensated in the event of a nuclear accident. And I think that the figures, the $500 million and the $560 million limitations respectively, are so out of date that even if they were adequate in 1957 by now they are not.

The estimates as to what would be the cost of a precautionary evacuation in the event of an incident similar to Three Mile Island have ranged somewhere between $3 billion and $17 billion. Obviously, the kind of limitation on liability that exists currently runs the risk of really depriving American citizens of the opportunity to be compensated. And so I think that this GAO report has been an important first step in grappling with the problem.

I have authored legislation which would remove the limitations altogether and put the nuclear industry and nuclear plants generally in the same position as all other industries are in this country; that is, that their total assets ought to be subject to being taken in the case of an accident; that the industry itself ought to provide for some kind of pooling responsibility; and then only in the event that additional payments would create a bankruptcy situation would you have the Federal Government stepping in and extending interest-bearing loans so that the plant could stay alive and at the same time allow citizens who suffered losses to be compensated adequately.

And that really is the thrust of my comments, and again I thank you very much for your courtesy in allowing me to make this presentation.

[The prepared statement of Congressman Weiss follows:]

## Testimony of

## Representative Ted Weiss

Madame Chairwoman and Members of the Subcommittee on Energy Research and Production, I first want to commend you for conducting today's hearing on the Price-Anderson Act. I appreciate the opportunity to appear before you.

The report being presented today by the General Accounting Office, "Congress Should Increase Financial Protection to the Public From Accidents at DOE Nuclear Operations," is a useful investigation of the Price-Anderson Act as it pertains to both federal and private-industry nuclear programs. As this report explains, Price-Anderson gives very little protection to the thousands and possibly millions of people who might suffer from an accident at the same time that it subsidizes the nuclear industry.

I am deeply concerned that the Act, in its present form, is most inequitable and that its shortcomings could exacerbate the economic and social devastation which would be caused by a major nuclear accident. The current incredibly low liability ceiling of $560 million for commercial nuclear facilities ($500 million for government facilities) would be vastly insufficient to

COMPENSATE THOSE INJURED OR SUFFERING LOSS AS THE RESULT OF A MAJOR NUCLEAR ACCIDENT. THE NUCLEAR REGULATORY COMMISSION HAS ESTIMATED THAT SUCH AN ACCIDENT COULD DO AS MUCH AS $14 BILLION DAMAGE.

AS AUTHOR OF LEGISLATION TO REVISE MANY PROVISIONS OF THE ACT I APPLAUD THE GAO FOR THIS REPORT, BUT I BELIEVE THAT ITS RECOMMENDATIONS DO NOT GO FAR ENOUGH. I BELIEVE THAT THE TAXPAYER SUBSIDY OF THE NUCLEAR INDUSTRY THROUGH THE PROTECTION OF THIS ACT SHOULD BE ELIMINATED. RATHER THAN MAKING THE FEDERAL GOVERNMENT LIABLE FOR COSTS ABOVE A CERTAIN DOLLAR-AMOUNT OF DAMAGES DONE, THE NUCLEAR INDUSTRY AND NUCLEAR-INDUSTRY CONTRACTORS OF DOE FACILITIES SHOULD BE MADE TO STAND--OR FALL--ON THEIR OWN, WITHOUT FEDERAL SUPPORT.

MY LEGISLATION WOULD ENTAIL USE OF FEDERAL FUNDS ONLY IN THE EVENT OF A CATASTROPHIC ACCIDENT WHERE VICTIMS' CLAIMS EXCEED A PLANT'S PRIVATE INSURANCE COVERAGE, THE PLANT'S TOTAL ASSETS, AND THE PROPORTIONAL CONTRIBUTION TOWARD AN INDUSTRYWIDE POOL. EVEN THEN, FEDERAL MONEY WOULD BE USED ONLY TO PROVIDE INTEREST-

BEARING LOANS.

I SUPPORT THE REPORT'S RECOMMENDATION THAT THE ACT SHOULD BE CLARIFIED TO PROVIDE FOR COMPENSATION FOR NON-RADIATION DAMAGES, SUCH AS THOSE WHICH COULD RESULT FROM A PRECAUTIONARY EVACUATION. THOSE FORCED TO LEAVE AN AREA SURROUNDING A PLANT WHERE AN ACCIDENT POSES A SERIOUS THREAT--FARMERS WHO MUST LEAVE THEIR FARMS UNTENDED, BUSINESSMEN AND WOMEN UNABLE TO CONDUCT BUSINESS--SUFFER REAL DAMAGES WHICH ARE NOT CURRENTLY PROVIDED FOR BY THE ACT. ALTHOUGH OFTEN OVERLOOKED, POSSIBLE SITUATIONS SUCH AS THIS COULD CAUSE WIDESPREAD DAMAGE WHICH I BELIEVE SHOULD BE ADDRESSED BY CONGRESS

THE GAO ALSO RECOMMENDS STUDIES BY BOTH THE DOE AND THE NRC WHICH WOULD ATTEMPT TO ESTIMATE THE POSSIBLE DOLLAR-AMOUNT DAMAGES OF DIFFERENT CLASSES OF NUCLEAR ACCIDENTS. I STRONGLY SUPPORT THIS PROPOSAL. THE $560 MILLION LIMIT SET MORE THAN 20 YEARS AGO IS WORTH SLIGHTLY MORE THAN A THIRD OF THAT AMOUNT NOW, DUE TO INFLATION. IT IS URGENT THAT CONGRESS PROVIDE FOR SUCH STUDIES SO THAT THE REAL COSTS OF POSSIBLE NUCLEAR ACCIDENTS CAN BE KNOWN. WITHOUT THIS INFORMATION, CONGRESS, THE NUCLEAR INDUSTRY, AND THE

AMERICAN PEOPLE WILL BE UNPREPARED FOR THE TREMENDOUS COSTS OF A CATASTROPHIC NUCLEAR POWER PLANT ACCIDENT.

MADAME CHAIRWOMAN, WE CONTINUE TO RELY ON THE ANTIQUATED PROVISIONS OF THE ACT TO MAKE COMPENSATION AVAILABLE TO THOSE WHO MIGHT SUFFER IN THE EVENT OF SUCH A NUCLEAR ACCIDENT, IN SPITE OF THE POTENTIAL FOR SOCIAL AND ECONOMIC DEVASTATION THAT COULD RESULT. THE CHANGES PROPOSED BY THE GAO PROVIDE A SOLID STEPPING STONE TOWARD MAKING THE ACT A JUST AND EQUITABLE STATUTE. AS LONG AS WE USE NUCLEAR ENERGY AND MANAGE NUCLEAR MATERIALS, IT IS VITAL THAT WE FACE THE RISKS OF DOING SO. I BELIEVE THAT CONGRESS WOULD DO A GRAVE INJUSTICE TO THE AMERICAN PEOPLE BY ALLOWING THE PRICE-ANDERSON ACT TO REMAIN UNCHANGED.

# # #

Mrs. **Bouquard**. Thank you, Ted.

If I understand you correctly, you agree with the first objective of the Price-Anderson Act as stated by the GAO, to assure the availability of funds to the public if we should have a serious nuclear accident, but you don't agree with the second one, which is to remove the deterrent to private participation. The money should be available to the public if we should have an accident, but you don't agree with the second one, which is to remove the deterrent for private participation. Is that correct?

Mr. **Weiss**. Well, if I can phrase it in my own way, I think that it's unfair to have the nuclear industry be put into a position where it in fact can limit, because of governmental action, the amount of money which citizens who have been damaged can claim as their just compensation. And I understand that the reason initially that was suggested was because there was a concern as to whether the industry could survive or not, or could grow. Well, it seems to me if you are balancing the well-being of the industry against the well-being of the American citizens you really ought to be concerned primarily with the well-being of citizens, not that of the industry.

Mrs. **Bouquard**. You said just a little bit earlier that all of the assets of plants are first to be used to satisfy claims to the victims.

Mr. **Weiss**. Right.

Mrs. **Bouquard**. Then the Federal Government would issue interest-bearing loans to cover the excess claims. Is that correct?

Mr. **Weiss**. Well, there would be a step in between. I think that there ought to be an industrywide responsibility as well, and only if the industry working with the particular plant involved could not provide sufficient compensation without bankruptcy, only in that instance should the Federal Government come in and provide assistance.

Mrs. **Bouquard**. Wouldn't that put the owner into bankruptcy?

Mr. **Weiss**. Well, I think it might put the owner into a situation where they would have loans outstanding to the Federal Government.

Mrs. **Bouquard**. Wouldn't this essentially put them into bankruptcy?

Mr. **Weiss**. Well, not necessarily. I think it would have to be a repayable loan. I don't think that anybody ought to be in the position of possibly damaging something else——

Mrs. **Bouquard**. Wouldn't they choose bankruptcy then?

Mr. **Weiss**. Pardon?

Mrs. **Bouquard**. Wouldn't they choose bankruptcy then?

Mr. **Weiss**. Well, not if you have an industrywide responsibility as well, which is what my bill would call for.

Mrs. **Bouquard**. If you have a contractor on facilities where the Government is the owner, whose assets would be attached to pay for the damages?

Mr. **Weiss**. If you're talking about the Government itself, I just don't think there ought to be limitations put on what a citizen could recover from his or her Government in the event of damage.

Mrs. **Bouquard**. Well, could this be a corporation of very few assets?

Mr. WEISS. Well, I think that there ought to be a mandate for insurance coverage. I think that there ought to be—if Government is involved, the Government ought to assume the responsibility.

Mrs. BOUQUARD. Wouldn't this in essence threaten our national security, though, by discouraging participation of contractors and subcontractors?

Mr. WEISS. Well, you know, there is a question at this point in the minds of a lot of people as to what really is in the best national security interest, and it seems to me that perhaps it creates a national security problem when we create a situation where industries are allowed to expand on the pretense that there is no real harm that they can cause and that they don't have to assume any liability in the event that they do cause harm, or the amount that they assume is so very limited. I think that the experience we have had in the course of the last 25 years or so would indicate that nuclear power is much more dangerous than people had reason to believe in 1957. I think that we ought to take that into account.

Mrs. BOUQUARD. What do you base that on?

Mr. WEISS. Well, Three Mile Island, for one thing.

Mrs. BOUQUARD. We didn't have any major accidents at Three Mile Island.

Mr. WEISS. Well, you know, we came that close.

Mrs. BOUQUARD. We didn't have any.

Mr. WEISS. Well, but you know, we came within a hairsbreadth of the Governor of the State of Pennsylvania calling for a full preliminary evacuation. As it was, pregnant women and women with infants were told to leave the immediate area. The estimate by one of the Federal insurance people was that if in fact a precautionary evacuation—never mind an accident—had been ordered by the Governor of Pennsylvania the damage involved would have ranged between $3 billion and $17 billion. That, it seems to me, makes the nuclear industry a very dangerous, even assuming health risks aside, a very dangerous neighbor as far as the damage which it can potentially cause to citizens in the surrounding area.

Mrs. BOUQUARD. Do you base that on anything else besides Three Mile Island?

Mr. WEISS. Well, you know, the Nuclear Regulatory Commission just in the last 3 or 4 days handed down a rating of plants depending on how dangerous they were. A number of them, I think 15, were found to be below average as far as their safety factors are concerned. One of those, Indian Point 2 reactor powerplant, is within 30 miles of the city of New York. There's been testimony throughout the years about the lack of adequate evacuation plans should there be a major accident or an accident which would cause or require evacuation.

I think that the record is replete with information as to what the potential dangers of nuclear powerplants may be.

Mrs. BOUQUARD. Be that as it may, the NRC did not deem them not safe. But going on to your statement on preliminary evacuation——

Mr. WEISS. Madam Chairman, they pointed out how unsafe they were compared to—how dangerous they were compared to some of the other plants.

**Mrs. Bouquard.** Moving on to your testimony. It indicates that you support changing the law to cover precautionary evacuations where no radioactivity is released. Do you think it's necessary—do we have a more compelling reason to have an immediate fund available through Price-Anderson for a precautionary evacuation at nuclear facilities rather than all Federal facilities that may lead to precautionary evacuations, such as a chemical spill? Wouldn't it be appropriate, an appropriate distinction, to limit Price-Anderson coverage to damages uniquely resulting from radioactive releases and allow the Federal Tort Claims Act to provide remedies for other types of damages that could equally result from nonnuclear related activities?

**Mr. Weiss.** Well, I think that the problem that we face is that whereas in most instances if you have a chemical release of some kind the surrounding area that would be affected and the people that would be affected would be fairly limited. Relatively limited in any event. A nuclear evacuation literally involves millions of people, depending on where that plant is located. And it seems to me that for the citizen who has been harmed, who has been damaged because of the mandated precautionary evacuation there ought to be some opportunity for recompense.

**Mrs. Bouquard.** Thank you very much.

Mr. Winn?

**Mr. Winn.** Thank you, Madam Chairman.

I appreciate our colleague from New York testifying before the subcommittee today.

I would like to just ask you about the legislation of yours that you referred to. How far along with that are you? Are you prepared to circularize your colleagues? Do you have a rough draft that some of us might look at at this stage of the game?

**Mr. Weiss.** Mr. Winn, the bill was introduced for the first time in the 96th Congress. It was reintroduced in the 97th. There were hearings held during the 96th by a special task force. So we've had hearings on it. I have circularized it to the membership of the House and I invited and repeat my invitation for people to read it. I'd be delighted to send you another copy. It may have never reached your desk. And if you are so inclined, I'd be delighted to have you consider being a cosponsor.

**Mr. Winn.** Well, I don't know that I am so inclined. I appreciate the offer from the gentleman.

Have you made any changes in the legislation since the hearings? Or are you considering any changes based on the hearings that Mr. Udall held?

**Mr. Weiss.** No. Basically, the outline of the legislation is still the same as when we introduced it about 3 years ago.

**Mr. Winn.** All right. Well, I thank you. If the staff can't find it for me I may call upon you. Thank you very much.

**Mr. Weiss.** Thank you.

**Mrs. Bouquard.** Thank you, Mr. Winn.

Mr. Volkmer.

**Mr. Volkmer.** As I understand your proposal to amend the act, it is basically to let private industry, that is in the nuclear field, have responsibility for damages for accidents. Is that right?

Mr. **Weiss**. I want them to assume the responsibility, but I also want the Federal Government to serve as a backup lender, if you will, to the industry and/or the plant in the event that the plant or industry does not have sufficient funds to take care of all of the damages.

Mr. **Volkmer**. Well, let's assume that we have a powerplant failure, whether it's like TMI or any of the others. And let's assume that it's with a utility, wherever it may be, and as a result, say, $1 billion in damages. The assets of the utility, total assets of the utility, let's say, are only $1 billion less $100 million, $900 million total. Assuming we do not have any industry pool, although I think that's a good idea, but assuming there is no industry pool, where are the people going to get their money?

Mr. **Weiss**. My legislation would in fact require an industry pool obligation as well as the individual resources of that plant, and then beyond that it would say that in the event that the amount of damages was so high that a bankruptcy would be caused that the Federal Government would come in and loan to the plant and/or industry pool the amount at normal market rate interest that would be required to pay the damages.

Mr. **Volkmer**. Well, let's assume that they borrow the money but the money borrowed is going to keep them in bankruptcy. In other words, your payout isn't going to be sufficient to pay it back. The utility rates could go very high. Remember, if you've got a shutdown of a plant, that is something that is not generating any money.

Mr. **Weiss**. Under my legislation there would in fact be the provision for a Government interest bearing loan, but it would not be a gift, and there would be no limitation as far as the individual who has been damaged is concerned.

You know, one of the things that I think we tend to forget when we discuss nuclear power is the fact that all of these plants have a finite, very limited life.

Mr. **Volkmer**. Thirty, thirty-five years.

Mr. **Weiss**. Thirty, thirty-five years. And so all of them are going to face, and some of them are in the process now beginning to face, what happens when they have to be put out of commission.

Mr. **Volkmer**. Thank you, Madam Chairman.

Mrs. **Bouquard**. Thank you very much, Mr. Volkmer.

We do have a guest member with us from the full Science and Technology Committee that is sitting with us today, Mr. Vin Weber, and we would like to recognize you for any questions that you would like to ask the witnesses.

Mr. **Weber**. Thank you, Madam Chairman.

I would like to first of all thank you for inviting me to participate.

Mrs. **Bouquard**. Happy to have you with us today.

Mr. **Weber**. I'm not a member of the subcommittee, so I'm probably behind these other members in my knowledge of the issue. But I do have an interest. I'm persuaded by the philosophy of what you are talking about, although I'm not sure that I understand the exact implications of it.

I wonder if you can help me on a couple of points. First of all, we're talking about the $500 million figure, $560 million figure as being so low, and everyone seems to agree with that. And yet we don't have any definitive information on what the real cost might be other than you've mentioned the evacuation costs of Three Mile Island and things like that. Is there any real data that would indicate to us exactly what the potential liability might really be to the industry?

Mr. WEISS. Nobody really knows, Mr. Weber. It's instructive when you go back in history as to how they picked the $500 million, $560 million figure to start with. They started with the premise that they wanted a limitation so that in fact the industry could develop. And they felt that it would not if in fact it had unlimited liability. And then secondly, they picked a figure out of the air, and they picked a figure which seemed to be substantial but which at the same time would not be so high as to scare off insurance companies and people in the industry generally. And so there is no scientific premise or basis on which that original figure was picked.

Mr. WEBER. Well, the figure was picked, if I understand it, to facilitate the growth of the industry without really looking at——

Mr. WEISS. Looking at liabilities or risk.

Mr. WEBER. But even to this date no one has tried to put a price tag on the thing?

Mr. WEISS. That's right. The only thing you could gage it by is some of the estimates that have been made as to what the cost would be in the event of precautionary evacuation. For everything else it really depends on what the value of the plant was, how many people would be injured, what the nature of those injuries were, and all that we are saying really is that regardless of what that figure ought to be American citizens ought not to be put into a position where there is an artificial limitation as to how much of their damages they can recover.

Mr. WEBER. Have you looked at exactly which companies are involved and which ones would be affected? Have you gone down to the brass tacks of this?

Mr. WEISS. No. I am operating on the basis of a general principle and we've tried to structure in the legislation that we've drafted a situation that would protect American citizens and at the same time be fair by way of setting an order of priorities as to who was responsible and then also providing conditional Government backing so that we would not be forcing industries or plants out of business.

Mr. WEBER. I guess one of—and this will be my last question—my concerns is, beyond the philosophical, the very practical arguments. I presume that the companies involved have large amounts of their stock owned by pension funds and widely held sources. It just seems to me it is worth considering. Philosophically you're right. If passage of your legislation would put those companies in or near a state of bankruptcy the impact on the companies may not be something that we should consider under a free market philosophy, but maybe those pension funds are something we should think about. Have you considered that?

Mr. WEISS. If in fact Three Mile Island—and we came close to having a major incident and certainly close to having a major evacuation—it seems to me that if in fact you had a major incident the nuclear industry, which is in difficulties now, not even because of economics—it has nothing to do with safety or aything else—I think that the nuclear industry in this country would really have been killed off.

I think second, that if it turned out that all you had was the major evacuation and then it turned out that people could not be compensated, and you are talking about millions of people rather than the thousands that are now affected in the Harrisburg area, I think again you would have had some very, very serious questions raised about the feasibility and the desirability of continuing with nuclear power.

Now, I happen to have some grave questions about nuclear power. But it seems to me that those who support it ought also to be concerned about building in sufficient protection so that there is fairness to the citizens but also so that the industry itself is not wiped out because the potentialities have not been considered.

Mr. WEBER. Thank you.

Mrs. BOUQUARD. Thank you very much, Mr. Weber.

Thank you very much, Congressman Weiss, for being with us today.

Mr. WEISS. Thank you very much, and again my compliments to the committee and to the GAO.

Mrs. BOUQUARD. Thank you very much.

We would now like to welcome Mr. Kenneth Davis, who is Deputy Secretary of Energy. We are certainly happy to have you with us today. I think Mr. Johnson is with you also. I would like to welcome Mr. Johnson. I want to welcome you here for the first time as Deputy Secretary of Energy.

We do have your written testimony before us. You may proceed as you wish. Without objection your testimony will be included in the record.

## STATEMENT OF KENNETH DAVIS, DEPUTY SECRETARY OF ENERGY, ACCOMPANIED BY TENNEY JOHNSON, GENERAL COUNSEL, U.S. DEPARTMENT OF ENERGY

Mr. DAVIS. Thank you, Madam Chairman. I am pleased to be here. As you have pointed out, this is my first occasion with a Department of Energy hat on.

I might comment, although I haven't done the research myself, if you research back long enough you would find I testified on the Price-Anderson Act before it was enacted back in 1957.

Mrs. BOUQUARD. I really wasn't here then. I can't comment on that.

Mr. DAVIS. I'm not sure what I said then, so I'm a little afraid to go back and do it myself.

I would like to, if I may, go through my testimony since I think it does cover the principal points that we wanted to give.

Mrs. BOUQUARD. Please proceed.

Mr. DAVIS. I am accompanied, as you have said, by Tenney Johnson, who for the record is the General Counsel of our Department.

I would like to provide some perspective of the current Departmental position on the Price-Anderson Act, and I think it might be well to review the concerns and the circumstances that motivated the Congress to enact this legislation.

During the early stages of commercial nuclear energy development, there was understandable reluctance on the part of private industry to participate in nuclear energy development without adequate liability insurance. A serious nuclear accident, while considered a remote possibility, could result in significant financial penalties to the involved commercial entities if the public were adversely affected.

This concern on the part of industry was shared by the contractors conducting research and development programs or operating nuclear facilities for the Government. Since the availability of private insurance was inadequate to provide what was considered reasonable coverage, legislation was introduced to deal with these problems.

In 1957, the Price-Anderson Act was passed by Congress in order to provide a substantial amount of funds to compensate the public in the case of a serious nuclear accident, and to remove the deterrent of unlimited liability which could have inhibited the commercialization of nuclear power and the ability of the Atomic Energy Commission to continue the effective conduct of its programs.

Before the passage of the Price-Anderson Act, the AEC had provided limited liability indemnification for its prime operating contractors. This protection, however, was not extended to subconstractors and suppliers. The twofold disadvantage of this arrangement was that subcontractors were hesitant to assume the potential high financial risks in the event of a nuclear-related accident, and the public, and I think this is the important part, could not be assured of substantial financial protection in the event of legal liability incident to contractual activities. It was to address these inequities that Congress, in the original Price-Anderson legislation, included section 170(d), which clearly covers organizations participating as contractors, subcontractors and suppliers in the atomic energy program.

The act authorizes the Department of Energy, through 1987, to indemnify contractors involved in construction and operation of production and utilization facilities and in the activities involving risk of a substantial nuclear incident against third-party liability claims resulting from a nuclear incident.

In addition, the act provides an umbrella of coverage for involved subcontractors, vendors, suppliers, architect-engineers and transporters. Currently 75 active prime contractors contain Price-Anderson indemnification protection, and it is estimated that 71,000 active subcontractors are also currently covered under these indemnity agreements. Attached to my statement is a list of the 75 prime contractors.

[The document follows:]

*Department of Energy prime contactors covered by the Price-Anderson Act*

| Contractor: | *Number of contracts* |
|---|---|
| Associated Universities, Inc | 1 |
| Babcock & Wilcox Co | 3 |
| Battelle Memorial Institute | 1 |
| Battelle Pacific Northwest Laboratories | 1 |
| Bendix Corp | 1 |
| Boeing Co | 2 |

| Contractor: | *Number of contracts* |
|---|---|
| Burns & Roe | 1 |
| Catalytic, Inc | 1 |
| Dupont | 1 |
| Duquesne Light Co | 1 |
| EG&G Idaho, Inc | 2 |
| Energy Impact, Assoc | 1 |
| Exxon Nuclear Idaho Co., Inc | 1 |
| Fenix & Scission, Inc.[1] | 1 |
| Fluor Engineers and Constructors, Inc | 2 |
| Garrett Corp | 1 |
| General Electric Co | 8 |
| Goodyear Aerospace Corp | 2 |
| Goodyear Atomic Corp | 1 |
| Hayes, Seay, Mattern & Mattern | 2 |
| Holmes & Harver, Inc.[1] | 1 |
| Mason & Hanger—Silas Mason Co. Inc | 1 |
| Monsanto Research Corp | 1 |
| Morrison—Knudson Co. Inc | 1 |
| NLO, Inc | 1 |
| Norman Engineering Co | 1 |
| Reynolds Electrical and Engineering Co., Inc.[1] | 1 |
| RMI Co | 1 |
| Rockwell Hanford Operations | 1 |
| Rockwell International | 10 |
| Ross Aviation | 1 |
| Stone and Webster | 2 |
| Teledyne | 1 |
| The Ralph M. Parsons Co | 1 |
| UNC Nuclear Industries, Inc | 1 |
| Union Carbide | 2 |
| United Nuclear Corp | 2 |
| University of California | 2 |
| University of Chicago | 1 |
| University of Puerto Rico | 1 |
| Vitro Engineering Co | 1 |
| Western Electric Co | 1 |
| Westinghouse Electric Corp | 5 |
| Westinghouse Hanford Co | 1 |
| Total prime contracts | 75 |

[1] These contractors do not have the indemnity clause included in their contracts, but are covered through indemnity clauses of other contracts.

Historically, DOE and its predecessor agencies have extended this coverage without requiring that the contractors procure any additional protection beyond the $500 million indemnity coverage provided by the Government. The Government, in effect, self insures.

Indemnity agreements with DOE contractors, which carry $500 million of coverage per incident, provide liability coverage to contractors for any nuclear incident, regardless of cause, that arises out of or in connection with the contract activities and occurs at a contract location or in transit to or from a contract location. More importantly, the agreements provide financial protection for any member of the public suffering bodily injury or property damage as a result of such liability. In addition, it should be noted that section 170(e) provides:

> that in the event of a nuclear incident involving damages in excess of that amount of aggregate liability, the Congress will thoroughly review the particular incident and will take whatever action is deemed necessary and appropriate to protect the public from the consequence of a disaster of such magnitude.

We think this is a very important provision in the statute.

Over the years, Madam Chairman, the nuclear contracting community has become accustomed to the provisions of the Price-Anderson indemnity protection, and we have every reason to believe that they are willing to continue to provide services under its coverage. In our opinion, the act has been most effective in meeting its dual goals of protecting the general public and encouraging contractor participation in Federal nuclear energy programs. We believe that continued Price-Anderson indemnification authority is essential to attract and retain the highly qualified contractors engaged in the Department's nuclear technology development and national defense programs.

With regard to your request that we comment on the merits of increasing the limitation on liability, there are several factors to consider. Liability limits for commercial nuclear activities and for Federal nuclear research and development should be considered separately. A number of circumstances, such as the difference in the nature of the activities and the substantial changes in the commercial indemnity system which the Congress made in 1975, in our opinion make this advisable. My comments today, as requested, pertain only to the DOE facilities performing nuclear research and development.

Without question, because of inflation, the potential cost of a significant nuclear accident could be far greater today than in 1957 when the Price-Anderson Act was first enacted. Balancing this erosion of dollar value, however, is the reinforcement of safety that has occurred as a result of experience gained over the last quarter of a century.

When the Price-Anderson Act was passed in 1957, there was little experience upon which to base a limit of liability. The $500 million figure was arrived at arbitrarily with no actuarial data on how many accidents could be expected to occur or how serious they might be. Since that time, we have had a great deal of experience, but very few accidents. The few that have occurred have served to further strengthen our safety systems. As a result, we can now predict with greater assurance that the chances of a nuclear accident are far more remote than when the Price-Anderson Act was originally passed. In the 24 intervening years, an outstanding safety record had been compiled during DOE and predecessor agency nuclear research and development activities. There has been only one incident in which a Price-Anderson indemnity payment has been made.

Nevertheless, we cannot categorically state that a serious nuclear accident involving the public could never occur. Therefore, we continue to believe that some source of readily available compensation is required to protect nuclear operators and to compensate the public for the effects of an accident. This is provided by the $500 million resource. It is the Department's opinion, however, that Congress never intended this figure to limit the amount of compensation that the public could receive. It was merely a sum of available compensation to meet a potential immediate need. A more extensive response was built into the act with the inclusion of section 170(e), which, as I previously mentioned, calls for the congressional review of incidents involving damages in excess of the

$500 million limit. For these reasons we believe that the current limit is reasonable and we recommend no change at present.

Madam Chairman, this completes my prepared statement, but I would be happy to respond to any questions you may have at this time.

[The prepared statement of Mr. Davis follows:]

Statement of Kenneth Davis
Deputy Secretary of Energy
U.S. Department of Energy
Before the
Subcommittee on Energy Research and Production
Committee on Science and Technology
U.S. House of Representatives
September 15, 1981

## Impact of the Price-Anderson Act on Nuclear Research and Development

Madam Chairman and Members of the Subcommittee, I am pleased to appear before you today to present the Department of Energy's views regarding the impact of the Price-Anderson Act on DOE's nuclear research and development activities. I am accompanied by Tenney Johnson, the Department's General Counsel.

In order to provide perspective for the current Departmental position on the Price-Anderson Act, it might be well to review the concerns and circumstances that motivated Congress to enact this legislation. During the early stages of commercial nuclear energy, there was understandable reluctance on the part of private industry to participate in nuclear energy development without adequate liability insurance. A serious nuclear accident--while considered a remote possibility--could result in significant financial penalties to the involved commercial entities if the public were adversely affected. This concern on the part of industry was shared by the contractors conducting research and development programs or operating nuclear facilities for the Government. Since the availability of private insurance was inadequate to provide what was considered reasonable coverage, legislation was introduced to deal with these problems. In 1957, the Price-Anderson Act was passed by Congress in order to provide a substantial amount of funds to compensate the public in the case of a serious nuclear accident and to remove the deterrent of unlimited liability which could have inhibited the commercialization of nuclear power and the ability of the Atomic Energy Commission (AEC) to continue the effective conduct of its programs.

Before the passage of the Price-Anderson Act, the AEC had provided limited liability idemnification for its prime operating contractors. This protection, however, was not extended to subcontractors and suppliers. The two-fold disadvantage of this arrangement was that subcontractors were hesitant to assume the potential high financial risks in the event of a nuclear-related accident, and the public could not be assured of substantial financial protection in the event of legal liability incident to contractual activities. It was to address these inequities that Congress, in the original Price-Anderson legislation, included section 170(d), which clearly covers organizations participating as contractors, subcontractors, and suppliers in the atomic energy program.

The Act authorizes DOE, through 1987, to indemnify contractors involved in construction and operation of production and utilization facilities, and in the activities involving risk of a substantial nuclear incident, against third-party liability claims resulting from a nuclear incident. In addition, the Act provides an umbrella of coverage for involved subcontractors, vendors, suppliers, architect-engineers, and transporters. Currently, 75 active prime contracts contain Price-Anderson indemnification protection and an estimated 71,000 active subcontracts are also currently covered under these indemnity agreements. (A listing of the prime contractors is attached to this statement.) Historically, DOE and its predecessor agencies have extended this coverage without requiring that the contractors procure any additional protection beyond the $500 million indemnity coverage provided by the Government. The Government, in effect, self-insures.

Indemnity agreements with DOE contractors, which carry $500 million of coverage per incident, provide liability coverage to contractors for any nuclear incident, regardless of cause, that arises out of or in connection with the contract activities and occurs at a contract location, or in transit to or from a contract location. More importantly, the agreements provide financial protection for any member of the public suffering bodily injury or property damage as a result of such liability. In addition, it should be noted that section 170(e) provides:

> "that in the event of a nuclear incident involving damages in excess of that amount of aggregate liability, the Congress will thoroughly review the particular incident and will take whatever action is deemed necessary and appropriate to protect the public from the consequence of a disaster of such magnitude."

Over the years, Madam Chairman, the nuclear contracting community has become accustomed to the provisions of the Price-Anderson indemnity protection, and we have every reason to believe that they are willing to continue to provide services under its coverage. In our opinion, the Act has been most effective in meeting its dual goals of protecting the general public and encouraging contractor participation in Federal nuclear energy programs. We believe that continued Price-Anderson indemnification authority is essential to attract and retain the highly-qualified contractors engaged in the Department's nuclear technology development and national defense programs.

With regard to your request that we comment on the merits of increasing the limitation on liability, there are several factors to consider. Liability limits for commercial nuclear activities and for Federal nuclear research and development should be considered separately. A number of circumstances, such as the difference in the nature of the activities and the substantial changes in the commercial indemnity system which the Congress made in 1975, make this advisable. My comments today, as requested, pertain only to DOE facilities performing nuclear research and development.

Without question, because of inflation, the potential cost of a significant nuclear accident could be far greater today than in 1957 when the Price-Anderson Act was first enacted. Balancing this erosion of dollar value, however, is the reinforcement of safety that has occurred as a result of experience gained over the last quarter of a century.

When the Price-Anderson Act was passed in 1957 there was little experience upon which to base a limit of liability. The $500 million figure was arrived at arbitrarily, with no actuarial data on how many accidents could be expected to occur or how serious they might be. Since that time, we have had a great deal of experience -- but very few acccidents. The few that have occurred have served to further strengthen our safety systems. As a result, we can now predict with greater assurance that the chances of a nuclear accident are far more remote than when the Price-Anderson Act was originally passed. In the 24 intervening years an outstanding safety record has been compiled during DOE and predecessor agency nuclear research and development activities. There has been only one incident in which a Price-Anderson indemnity payment has been made.

Nevertheless, we cannot categorically state that a serious nuclear accident involving the public could never occur. Therefore, we continue to believe that some source of readily available compensation is required to protect nuclear operators and to compensate the public for the effects of an accident. This is provided by the $500 million resource. It is the Department's opinion, however, that Congress never intended this figure to limit the amount of compensation that the public could receive. It was merely a sum of available compensation to meet a potential immediate need. A more extensive response was built into the Act with the inclusion of section 170(e), which, as I previously mentioned, calls for the Congressional review of incidents involving damages in excess of the $500 million limit. For these reasons, we believe that the current limit is reasonable and, we recommend no change at present.

Madam Chairman, this completes my prepared statement but I would be happy to respond to any questions you may have at this time.

Mrs. BOUQUARD. Thank you very much for your very fine statement.

I am curious about your statement on page 5 that "there has been only one incident in which a Price-Anderson indemnity payment has been made." Could you tell us a little bit more about that, Mr. Davis?

Mr. DAVIS. Yes. It is my understanding this was the SL-1 accident in Idaho in 1961, if I remember correctly. It was covered rather extensively in testimony by Mr. Fri. The accident was one, as you recall, where I believe three servicemen were killed when they were pulling control rods out of a reactor. There is no very accurate description of what actually did happen. As a result of that, there was a payment made under the terms of the Price-Anderson indemnity. But this is the only instance of which we have any record in which the act has been specifically utilized.

Mrs. BOUQUARD. I would like to have some backup material on this, if you could provide it for the record.

Mr. DAVIS. We'd be very happy to.

[The information follows:]

The following information is in response to the request for backup material on the SL-1 incident. This incident at the National Reactor Test Station (NRTS) was the only one resulting in injury to persons which was determined by the AEC to be a "nuclear incident" within the meaning of the Atomic Energy Act. The claims action summary follows:

A suit was brought against Combustion Engineering, a prime Atomic Energy Commission contractor on May 18, 1963, in the Supreme Court of New York, Oneida County, by the Estate of John A. Byrnes, III, one of the servicemen killed in the SL-1 incident at NRTS on January 3, 1961. The complaint alleged that Byrnes dies as a "result of injuries" caused by an "atomic excursion or explosion." Damages were sought in the amount of $425,000. Pursuant to negotiations between representative of the plaintiff and the government, the Surrogate of Oneida County, New York, approved the settlement of this action in June 1964, but the payment of $70,000 to the plaintiff. Since Combustion had not been directed to carry financial protection against hazards, the $70,000 recovery for damage caused by an "atomic excursion or explosion," i.e., nuclear incident, was borne by the Atomic Energy Commission under the Nuclear Hazards Indemnity (Price-Anderson) provisions of its contract with Combustion.

Mrs. BOUQUARD. On pages 7 and 8 of the GAO report it states that there is $60 million less coverage available to the public for serious accidents at a contract facility than at a facility licensed by the NRC. The GAO states that "it is difficult to justify two different levels of public financial protection."

Do we really have just two levels of protection, Mr. Davis? For example, if the NRC licenses a nonprofit educational institution or another Federal agency's nuclear facility, is the licensee required to purchase insurance?

Mr. JOHNSON. Madam Chairman, may I try to answer that question?

Mrs. BOUQUARD. Please proceed.

Mr. JOHNSON. First of all, there is protection for licensees of the Nuclear Regulatory Commission performing research work at reactors under their authority. To my knowledge there is no activity by a nonprofit educational institution at a DOE facility which is not covered by a DOE contract. Thus, educational institutions performing work on reactors or other facilities owned by the DOE are covered by the contractual provisions of the Price-Anderson Act.

So in that situation, where they are covered by contract, we do not require contractors to buy insurance.

Mrs. BOUQUARD. They do not have to obtain private insurance?

Mr. JOHNSON. That's correct.

Mrs. BOUQUARD. At the time of enactment of the Price-Anderson Act, obviously Congress felt two different levels of indemnification might be appropriate. What has changed since that time, Mr. Johnson?

Mr. JOHNSON. Well, originally, the limit was the same—$500 million. In 1975, as part of the revision of the Price-Anderson Act, a provision was added to require the industry to add sums of money so that, in the event of an incident requiring compensation, each plant that was licensed would have to provide $5 million, and in addition, the industry as a whole was required to obtain insurance from a gradually enlarging insurance pool. That is not the situation with DOE contractors. They are situated quite differently than utilities.

The Joint Atomic Energy Committee in 1975 did examine whether there should be a change in the limit of liability, notwithstanding the fact that utilities were treated one way and DOE contractors were treated another, and the committee felt that no change was necessary or appropriate. One of the points that the committee wanted to make was that the limitation on liability was not intended to be a limit on how much the public might ultimately recover in the event of an accident.

Let me quote from the committee's report on this particular point.

Senate Report 94-454, on page 12 quotes with approval a report made in 1965:

> The limitation of liability serves primarily as a device for facilitating further congressional review of such a situation as an incident rather than an ultimate bar to further relief of the public.

In other words, if an incident should take place, the $500 million available, which is roughly comparable to the $560 million now available for commercial situations, would serve to provide immediate relief. In fact there is a whole provision on claims that have priority as opposed to loss of consortium, loss of income, and so on, which ultimately may be recoverable. But the Congress then can consider the situation in its entirety. The limitation also serves as a means of fiscal control on the part of the Congress because it may be that the Congress simply cannot make more money available from the Federal Treasury. But that would be a congressional decision to be made under the circumstances that would obtain.

Mrs. BOUQUARD. So you believe that the different levels were and are still appropriate, notwithstanding the GAO report, Mr. Davis, Mr. Johnson?

Mr. DAVIS. Actually, the way the Price-Anderson Act is now structured, as Mr. Johnson referred to, as more nuclear plants are added and as we go beyond roughly 80 plants, the Government will not be providing any indemnity protection. The amount from the retrospective premiums will be increasing at the rate of $5 million per plant. So there will be a divergence in any case. As more nuclear plants are added, the total will increase and it could also be increased by a greater availability of private insurance. So it's almost impossible to keep the two in synchronism as a function of time.

I think the other thing that relates to this, as I indicated in my testimony, is that there are differences in the types of activities, the size of the nuclear reactors, and the fact that most of the Federal Government's installations are at remote sites. There are a considerable number of differences just in the activities themselves.

Mrs. **Bouquard**. What I was trying to get at, Mr. Davis, as you point out, with the participation for private facilities under NRC this level of protection is going to grow.

Mr. **Davis**. Right.

Mrs. **Bouquard**. Do you not feel that the same level of protection should grow at a DOE facility?

Mr. **Davis**. Well, an automatic mechanism has been built into the other. I think at this particular time we are relying pretty heavily on the things that Mr. Johnson just cited as the protection of the public. We don't feel we have any valid basis today for saying that the number ought to be something different than the $500 million. It is very difficult to try to determine what the criteria ought to be for establishing the limit; what the risks really are.

Mrs. **Bouquard**. We'll go on to another question then.

On page 8 of the report GAO states that "the public is not guaranteed that it will receive additional compensation should damages exceed the $500 million limit."

Well, do you feel the public should be guaranteed additional protection? Or do you think that section 170(e) takes care of this for us?

Mr. **Davis**. Well, it seems to me that section 170(e) expresses the intent and the will of Congress, and I think that's probably adequate.

Mrs. **Bouquard**. Thank you very much.

Mr. Winn?

Mr. **Winn**. Thank you, Madam Chairman.

It is my understanding that the Price-Anderson Act provides an aggregate liability of $100 million together with some other financial protection for a nuclear incident occurring outside of the United States. That's section 170(e) that was referred to. What's the rationale for the difference between this amount and the amount for nuclear incidents that occur within the United States?

Mr. **Davis**. Well, sir, I am not sure I can adequately explain the rationale. I don't believe it presents a problem to us in terms of our DOE research and development, however, since we don't have any significant facilities outside the United States, and this applies where the incident occurs, rather than where the contractor supplier happens to be. So that it is not a significant factor, I believe, from our point of view.

Mr. **Winn**. Don't we have joint operations with other countries where there might be some liability by one or two U.S. firms or the Federal Government?

Mr. **Davis**. Well, I don't believe we have any facilities overseas where we have our contractors operating any nuclear facilities which would be likely to lead to this kind of a liability. We haven't been able, so far at least, to identify any. We could look some more.

If we can find some we could supply them for the record. But I don't really believe there are any.

Mr. WINN. You're probably right. I just don't know that either.

Mr. Weiss referred earlier to the evacuation plans and the amount of money, estimated amount of money for costs. I don't know where he got that information. But many of us were concerned about TMI and a group from this committee went up there a couple of days later to try to ascertain what the problems were. One of them obviously was an evacuation plan or the lack of possible or potential evacuation plans. Does DOE have in place evacuation plans for their 280 facilities which it operates? Or do they leave that up to civil defense? FEMA? Who has got the jurisdiction?

Mr. DAVIS. Well, I am not at all sure whether we have 280 different evacuation plans. We do have an emergency center, which is operated on an around-the-clock basis, to deal with any emergencies, any nuclear incidents that might arise in connection with any of our departmental operations. To the extent to which detailed evacuation plans have been prepared for all of the facilities, I don't believe I can answer at the moment.

Mr. WINN. I'm afraid you're telling me no, that you don't have any plans. One of the problems we ran into up there was communications. One phone was out of order or off the hook or something and they couldn't get into the Governor's mansion and he couldn't get back to the control room. It was a comedy of errors, really. Under the circumstances they lucked out.

Mr. DAVIS. Well, I believe, without knowing all the details, that we have a pretty well thoughtout emergency response plan. We have an emergency operations center at Germantown. It's manned 24 hours a day. I think we have a good communications system between the various facilities. Now there may be some outlying ones that don't have that.

Mr. WINN. Well, to save time for the committee, I wonder if you could submit that evacuation plan to us. If it's in writing, I think we'd like to have it.

Mr. DAVIS. Well, let us submit to you what we do have, and we will be happy to do that.

[The information follows:]

The concept of emergency planning at Department of Energy facilities necessarily implies mutually supportive emergency planning and preparedness arrangements by several levels of government: Federal, State and local governments, including counties, townships, and villages. In general, the Department will be responsible for responding to all emergencies occurring within its facilities' borders. Local governments will be responsible for protective actions and responses in the off-site areas which could be affected by the emergency. The Department's operating facilities have developed their radiological emergency plans accordingly. Thus the provision for off-site evacuations would not be included in these DOE facility plans but rather in the emergency plans of the off-site jurisdictions. DOE planning, however, does include means for prompt notification of all cognizant Federal, State and local response agencies and would include recommendations for evacuations if warranted.

There has never been an accident at a DOE facility which required an off-site evacuation.

Mr. WINN. Do you know offhand, either one of you, whether civil defense or FEMA or who might—is anyone else involved in that plan other than DOE's own communications center?

Mr. **Davis**. Well, there would be constant communications with FEMA as well as with other agencies through the emergency operations center. It is a fairly elaborate emergency center. The part of your question I think I can't answer myself is whether or not we have evacuation plans for each and every one of our contractor operated facilities.

Mr. **Winn**. Well, I think what the subcommittee would like to know, if you can furnish that to us, the written directions, the step-by-step what happens if one of your facilities gets into trouble or has trouble.

Mr. **Davis**. Well, we'd be very happy to do that.

[The information follows:]

The procedures and safeguards which our facilities follow in the cases of nuclear accidents might best be illustrated by our furnishing the following documents on the procedures followed at G-Division of Lawrence Livermore National Laboratory in California as a representative step-by-step example of written directions to working level personnel in the Department's laboratory and industrial operations. These procedures are written at two levels in the laboratory: the specific plan in G-Division, and the overall plan for the laboratory.

Although our other facilities do not follow the identical procedures followed by the one at Livermore because the configurations of the individual laboratory and industrial facilities are in all cases somewhat different, they do follow the same general pattern to provide adequate safeguards tailored to their individual needs.

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# G Division Disaster Plan

November 1980

I. Scope

II. Purpose

III. Responsibilities

Appendix A Earthquakes at LLNL - What to do.

Appendix B Disaster instructions for G Division area

Appendix C Emergency Shutdown Planning Guide

Appendix D Equipment and Supplies

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# G Division Disaster Plan

## I. Scope

This plan designates individual responsibilities and outlines basic emergency procedures to be employed following a disaster of such magnitude that the LLNL Disaster Control Plan will require G Division to be responsible for its own self-help. This plan is compatible with the LLNL Disaster Plan.

## II. Purpose

In the event of a disaster, certain actions that may be necessary include area evacuation, notification of proper authorities, rescue and medical attention for injuried personnel, establishment of area control, fire control, emergency shutdown of equipment, and control of hazards. This plan provides general information and basic actions appropriate to a self-help situation.

## III. Responsibilities

### A. Individual Employee

1. Evacuate area immediately when directed, or when common sense indicates.
2. Conduct emergency equipment shut-down if warranted.
3. Help injured.
4. Proceed to nearest designated assembly area and await instructions.

### B. Division Management

1. Pre-planning
    - a) Post Disaster Instructions (Appendix B) and be sure employees understand.
    - b) Insure that emergency shutdown instructions are implemented as needed. (See Appendix C for guidance.)
    - c) Conduct training and practice drills.
    - d) Ensure that a reasonable number of employees take first aid and other training.
2. During Emergency
    - a) Assume the responsibility of the Senior Management Member Present (SMMP), or act under the direction of a SMMP.

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C. Senior Management Member Present (SMMP)

1. Take charge.
2. Assess the situation.
3. Order evacuation if indicated. Designate personnel to check buildings for injured and to identify problems, e.g., fires, hazards.
4. Evacuate and treat injured.
5. Take appropriate action to deal with problems.
6. Communicate with LLNL Disaster Control Director and Physics Department to report status, receive instructions and request assistance.
7. Prevent entry of unauthorized personnel into the area.

## APPENDIX A

## EARTHQUAKES AT LAWRENCE LIVERMORE NATIONAL LABORATORY — WHAT TO DO

### DURING THE EARTHQUAKE

1. Remain calm. Think through the consequences of any action you take. Try to calm and reassure others.

2. If indoors, watch for falling plaster, bricks, light fixtures, and other objects. Pay particular attention to book cases and filing cabinets. Stay away from windows.

3. If in danger, get under a table or desk; in a corner away from the windows; or in a strong doorway. Encourage others to follow your example. Usually it is best not to run outside.

4. If in a high-rise office building, get under a desk. Do not dash for exits, since stairways may be broken and jammed with people. Power for elevators may fail.

5. If in a crowded area, do not rush for a doorway, since hundreds may have the same idea. If you must leave the building, choose your exit as carefully as possible.

6. If outside, avoid high building, walls, power poles, and other objects which could fall. Do not run through streets. If possible, move to an open area away from all hazards. If in an automobile, stop in the safest place available, preferably an open area.

### AFTER THE EARTHQUAKE

1. Follow instructions that may be given over the emergency PA system. If you are told to evacuate the building, go to the designated assembly point for your area unless directed otherwise.

2. Check for injuries in your fellow workers. Do not attempt to move seriously injured persons unless they are in immediate danger of further injury. For serious or life threatening emergencies, call 2-7333 (333 at Site 300) for emergency assistance.

3. Check for fires or fire hazards, particularly in chemical storage areas.

4. Check utility lines and equipment for damage. If gas leaks exist, shut off the main gas valve. Shut off electrical power if there is damage to your equipment. Do not use matches, lighters, or open flame appliances until you are sure no gas leaks exist. Do not operate electrical switches or appliances if gas leaks are suspected. This creates sparks which can ignite gas from broken lines.

5. Do not touch downed power lines or objects touched by the downed wires.

6. Immediately clean up spilled chemicals and other potentially harmful materials.

7. Check to see the sewage lines are intact before permitting continued flushing of toilets.

8. If power is off, check your freezer and refrigerator for chemicals and other materials sensitive to heat.

9. Don't use the telephone unless you have an emergency.

10. Supervisors should make a check of their personnel and attempt to account for any missing persons.

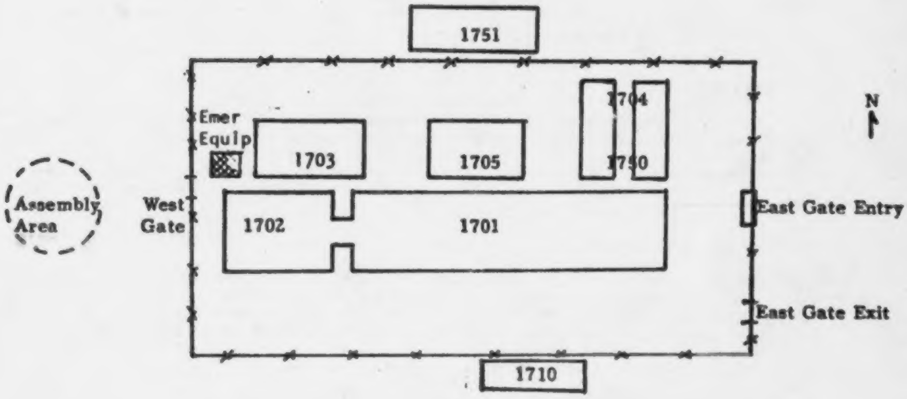
11. Building coordinators should check their facilities and report any emergencies to the Emergency Dispatcher.

12. In the event of a major earthquake in the Bay Area, the Laboratory will attempt to advise employees about road conditions and general status over the emergency PA system.

## APPENDIX B

### Disaster Instructions for G Division Area

1. Evacuate area immediately when directed, or when common sense indicates. Sound alarm if appropriate.
2. Conduct emergency equipment shut-down if warranted. ARAC personnel must consider the importance of any emergency assignment.
3. Help injured.
4. Proceed to nearest designated assembly area and await instructions


1751
1704
1750
N
Emer
Equip
1703
1705
Assembly
Area
West
Gate
1702
1701
East Gate Entry
East Gate Exit
1710

## APPENDIX C

## ARAC Emergency Shut Down Instruction Preparation

1. Determine which equipment requires emergency shut down.
2. Analyze in advance the operation to determine the simplest possible procedure.
3. Identify all switches and tools requires.
4. Post the procedure so it is readily available if needed.
5. Train personnel in this procedure.
6. Emphasize personnel safety. ARAC personnel must conside the importance of any emergency assignment consistent with personal safety.
7. Plant Engineering will shut down all buildings.

## APPENDIX D

## Emergency Equipment and Supplies

To be stored in box near West Gate, 1700 Green Badge Area

| | | |
|---|---|---|
| 1. | Hard hat | 2 dozen |
| 2. | Flashlight & batteries | 2 dozen/4 dozen |
| 3. | Gloves, leather & cotton | 2 dozen, M & L |
| 4. | Barrier tape | 12 rolls |
| 5. | First aid kit | 1 |
| 6. | Bolt cutter | 2 large |
| 7. | Pocket knife | 1 dozen |
| 8. | Pipe wrench | 2 - 24 in., 2 - 14 in. |
| 9. | Eye protection | 1 dozen |
| 10. | Bull horn | 1 |
| 11. | Crow bar, 24" | 1 |
| 12. | Axe | 1 |

### FIRST AID SUPPLIES

4" x 4" sterile dressings
sterile surgical pads
2" bandage rolls
2" adhesive tape
triangular bandages
assorted plastic strips (band-aids)
disposable blankets
stretchers
Povidone-Iodine swab sticks
assorted blow-up splints

RCO:clm:1364z

c: G-Division & Support
J. Anderson/R. Engle
Mike Mickel, HC

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## CPR Training

Paul Gudiksen
Mike MacCracken
Ken Peterson
Bill Porch
Tom Sullivan
John Walton
Nancy Badal

## First Aid Training

Fred Luther
Carol Myers
Dick Orphan

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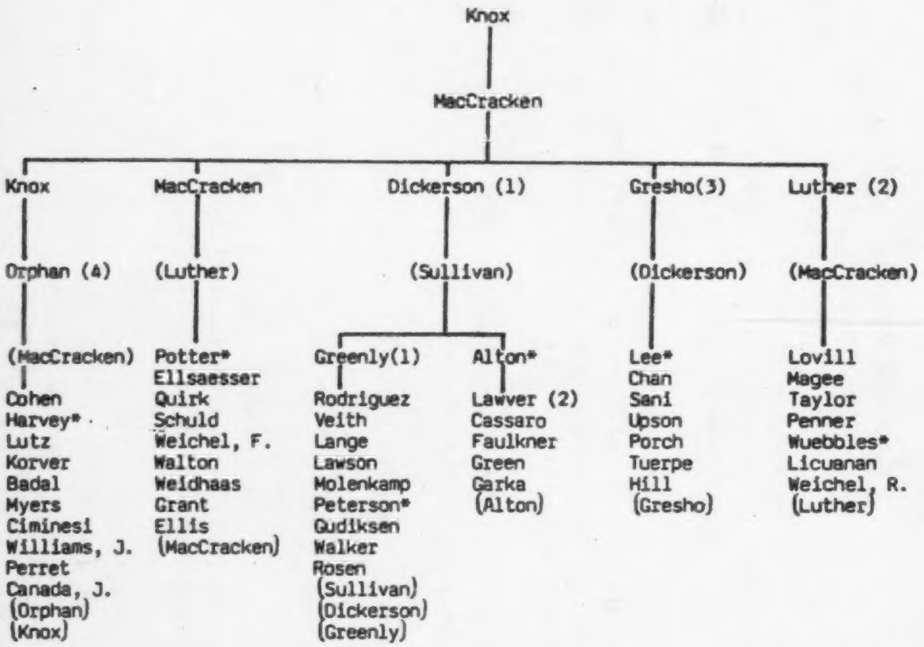
1/20/81

## G DIVISION EVACUATION ROSTER

Safety is a line management responsibility!


Knox
MacCracken
Knox
MacCracken
Dickerson (1)
Gresho(3)
Luther (2)
Orphan (4)
(Luther)
(Sullivan)
(Dickerson)
(MacCracken)
(MacCracken)
Cohen
Harvey*
Lutz
Korver
Badal
Myers
Ciminesi
Williams, J.
Perret
Canada, J.
(Orphan)
(Knox)
Potter*
Ellsaesser
Quirk
Schuld
Weichel, F.
Walton
Weidhaas
Grant
Ellis
(MacCracken)
Greenly(1)
Rodriguez
Veith
Lange
Lawson
Molenkamp
Peterson*
Gudiksen
Walker
Rosen
(Sullivan)
(Dickerson)
(Greenly)
Alton*
Lawver (2)
Cassaro
Faulkner
Green
Garka
(Alton)
Lee*
Chan
Sani
Upson
Porch
Tuerpe
Hill
(Gresho)
Lovill
Magee
Taylor
Penner
Wuebbles*
Licuanan
Weichel, R.
(Luther)

( ) Div. Mgmt alternate
* Primary alternate scientist

Secretaries should do quick scan of sign out boards and travel to help provide input to division management.

# LLNL DISASTER CONTROL PLAN
## - HIGHLIGHTS -

1. DESCRIBES THE CURRENT LLNL ORGANIZATIONAL MATRIX WHICH IS DESIGNED TO RESPOND TO AND ESTABLISH CONTROL OF A MAJOR EMERGENCY.

2. SETS FORTH GENERAL RESPONSIBILITY OF THOSE LABORATORY DEPARTMENTS WHICH HAVE PRIMARY EMERGENCY RESPONSE FUNCTIONS; AND ALSO SETS FORTH DUTY STATEMENTS FOR THOSE SPECIFIC JOBS WHICH CAUSE THE DISASTER CONTROL ORGANIZATION TO FUNCTION.

3. CHARACTERIZES THE LABORATORY'S EMERGENCY RESPONSE SYSTEM THROUGH A PROGRESSION OF INCREASING LEVELS OF SEVERITY AND COMPLEXITY.

4. DESCRIBES HOW THE SYSTEM IS ACTIVATED.

5. ADDRESSES THE ROLE OF SELF-HELP PLANS IN A SITE-WIDE EMERGENCY.

6. SUMMARIZES THE COMMUNICATION SYSTEMS WHICH ARE AVAILABLE TO ASSESS THE SEVERITY OF AN EMERGENCY, ALLOCATE RESOURCES, AND PROVIDE INFORMATION AND ASSISTANCE TO OUR EMPLOYEES.

7. MISCELLANEOUS:
    A) DEFINES RESPONSIBILITY FOR ANNUAL REVIEW CYCLE.
    B) OFF-HOUR EMERGENCY RESPONSE.
    C) FALLOUT SHELTER PROGRAM.

# DISASTER CONTROL PLAN

## TABLE OF CONTENTS

| SUBJECT | PAGE |
|---|---|
| I. Introduction | 1 |
| A. Disaster control organization chart (Fig. 1) | 2 |
| II. Purpose of the plan | 4 |
| A. Potential Disasters (Fig. 2) | 5 |
| III. Scope | 6 |
| IV. Authority and promulgation | 6 |
| V. Emergency Operations Guides | 7 |
| VI. Mission of the Disaster Control Organization | 8 |
| VII. Role of various Lab organizations | 8 |
| VIII. Position Duty Statements | 10 |
| IX. Transition of Operations | 18 |
| A. Organization Transition Matrix (Fig. 3) | 20 |
| X. Communications | 23 |
| A. Communications (Fig. 4) | 24 |
| B. Emergency Alarm Systems (Fig. 5) | 26 |
| C. Group Alerting System (Fig. 6) | 28 |
| XI. Off-Hours Emergencies | 27 |
| XII. Supply and Logistics | 29 |
| XIII. Shelters | 29 |
| A. Shelter Location Map (Fig. 7) | 31 |
| XIV. Supplements | 32 |

## I. INTRODUCTION

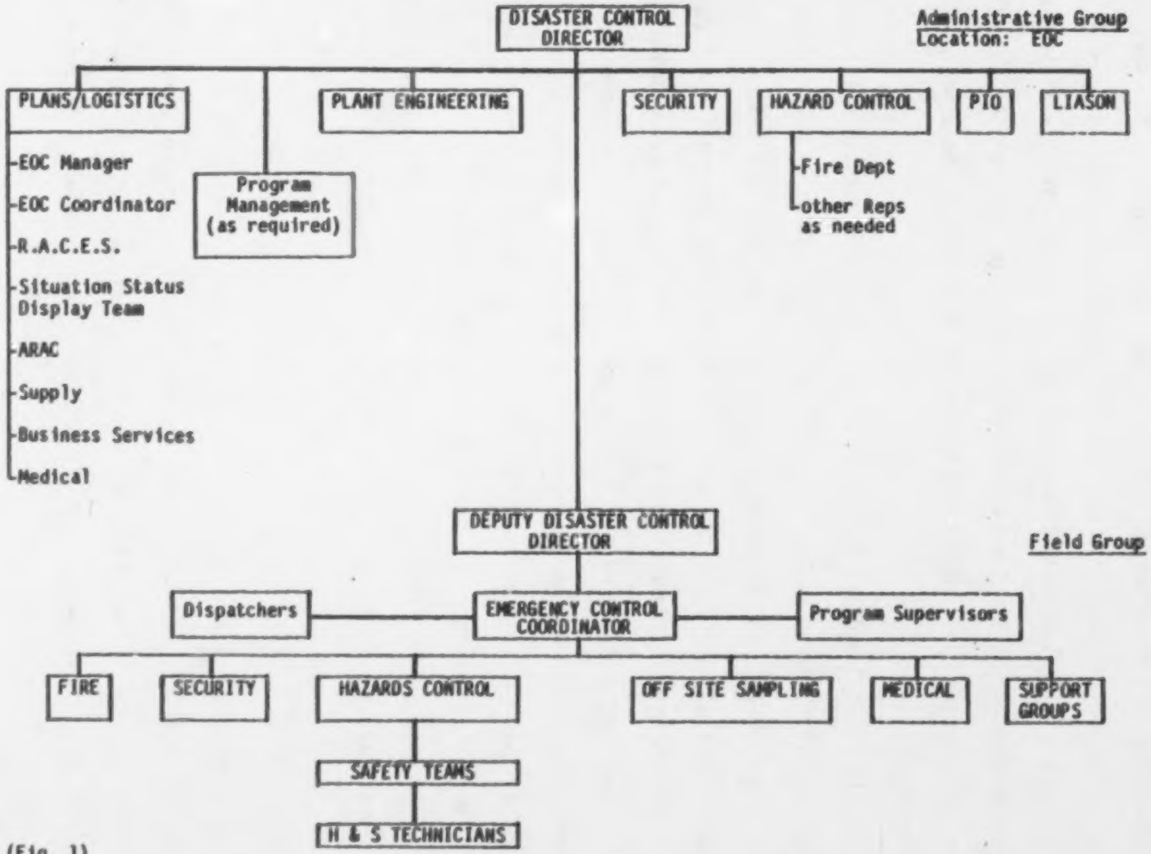
Lawrence Livermore National Laboratory (LLNL), in its continuing effort to insure safe and continuous operation, care for its employees, safeguard laboratory property and records, and minimize any off-site effects of incidents which may occur at the laboratory; hereby sets forth its Disaster Control Plan.

The disaster response and mitigation philosophy of Lawrence Livermore National Laboratory is one of maximum reliance upon and use of on-site organizational capabilities and resources. This is based upon the realization that during major disasters, such as earthquake or nuclear attack, outside help may not be available.

The Laboratory Emergency Services, and other human and mechanical resources throughout the laboratory, shall respond in cooperation towards the common goal of incident mitigation, continuity of operations, and recovery. LLNL also stands ready to assist the surrounding community in time of disaster.

This Disaster Control Plan describes how the integrated Matrix system common to all laboratory operations functions in an emergency. This plan includes the following components: 1. Overall Disaster Control Plan. 2. Emergency Operations Guides. 3. Supplements. 4. Organization Activation Matrix. The key is simplicity. The Disaster Control Organization (Fig. 1) must expand upon the emergency service units which routinely cope with small and moderate accidents. The basic emergency service support elements are composed of Fire Department, Security, Plant Engineering and Safety Team units. The plan outlined in this document is

L.L.N.L. DISASTER CONTROL ORGANIZATION CHART 4/29/81


DISASTER CONTROL DIRECTOR
Administrative Group
Location: EOC
PLANS/LOGISTICS
EOC Manager
EOC Coordinator
R.A.C.E.S.
Situation Status Display Team
ARAC
Supply
Business Services
Medical
Program Management (as required)
PLANT ENGINEERING
SECURITY
HAZARD CONTROL
Fire Dept
other Reps as needed
PIO
LIASON
DEPUTY DISASTER CONTROL DIRECTOR
Field Group
Dispatchers
EMERGENCY CONTROL COORDINATOR
Program Supervisors
FIRE
SECURITY
HAZARDS CONTROL
SAFETY TEAMS
H & S TECHNICIANS
OFF SITE SAMPLING
MEDICAL
SUPPORT GROUPS

(Fig. 1)

concerned with major emergencies or disasters that involve the total Disaster Control Organization. The Disaster Control Organization is divided into an Administrative Group and a Field Group. The Field Group is subordinate to the Administrative Group and is responsible for performing the field operations necessary to alleviate the effects of a disaster.

The Field Group usually operates out of a field command post. The Adminstrative Group usually operates out of the Emergency Operations Center (E.O.C. - currently in Building 271), and develops policy guidelines governing the operations of the Disaster Control Organization. In the event of a disaster, the Administrative Group in the EOC also provides overall control and administrative support and notifies concerned individuals and off-site agencies including the media. All Laboratory scientific and technical departments are required to assist as requested by the Disaster Control Director.

In General, emergencies do not interrupt wide segments of Laboratory operations, and the general public or the local community does not become involved. Emergencies are reported to the Fire Department and are referred, in turn to the person or persons responsible for controlling the particular type of accident. Examples of emergencies are hazardous spills or water, flammable material, toxic materials or radio-nuclides, accidental explosions, fires or suspected fires, and injuries requiring first aid. Major emergenices are accidents that endanger life and property.

Disasters are serious accidents that cause injuries or extensive damage and threaten to cause additional injuries and damage.

Generally, accidents that can cause serious off-site effects and create public relations problems with the community are classified as disasters. The entire Disaster Control Organization is available during disasters to control the extent of injuries and property damage.

Disasters result from natural and man-made causes. Earthquakes, floods, severe weather, and hurricanes are disasters of natural origin. Of these, earthquakes are the most likely to effect overall Laboratory operations by damaging buildings, spilling hazardous materials, and starting fires from short-circuited electrical equipment. Man-made disasters are caused by explosions, nuclear criticality excursions, widespread fire, terrorism and nuclear attack. Conceivably, natural and man-made causes can combine to create disastrous conditions. Lightning, for example, could strike a large explosive mixture. High winds at an off-site fire could carry firebrands to many Laboratory buildings where they could start additional fires.

## II. PURPOSE OF THE DISASTER CONTROL PLAN:

A. To provide for the mobilization and direction of the Laboratory's Disaster Control Organization under major emergency or disaster conditions. (See Figure 1 - Disaster Control Organization)

B. To establish and define the operational organizations, define tasks to be performed, identify who performs the tasks and provide for coordination between emergency service personnel and Laboratory departments and divisions.

C. To identify who is in command, thus maintaining unity of command.

## POTENTIAL ON-SITE OR OFF-SITE INCIDENTS IMPACTING THE LAB

1. Earthquake
2. Hazardous materials spill or release, criticality, etc.
3. Major fire
4. Explosion
5. Off-site incident exposing lab
6. Severe weather
7. Civil disturbance*
8. Terrorism*

* Security Department Supplement #12 (classified) will apply.

(Fig. 2)

## III. SCOPE

The Disaster Control Plan sets forth the emergency organization structure, response procedures and roles, for all major emergencies and disasters occuring on L.L.N.L. properties, or occuring off-site with a potential or actual impact upon the Laboratory. These disasters include, but are not limited to, the potential incidents set forth in Figure 2.

This plan creates a Disaster Control Organization which utilizes or may utilize any and all Laboratory employees as disaster workers. All employees and units of the Laboratory are hereby subject to disaster duties under this plan.

## IV. AUTHORITY AND PROMULGATION:

This plan shall be the official Disaster Control Plan for the Lawrence Livermore National Laboratory. It includes the following components:

1. Overall Disaster Control Plan.
2. Emergency Operations Guides.
3. Supplements.
4. Organization Activation Matrix.

This plan may be activated by any authorized individual serving in one of the following Disaster Control Organization positions, in concert with the activation matrix:

1. Emergency Control Coordinator (ECC).
2. Deputy Disaster Control Director (DDCD)
3. Disaster Control Director (DCD)

When this plan is in effect, this plan and the Disaster Control Organization operates with the full authority of the Laboratory Director.

Basic Authorization for the plan is set forth in Section 3.00, Emergency Control, of the Laboratory Health and Safety Manual.

The plan represents the Laboratory's formal response to disasters. This plan is approved by the State of California, Office of Emergency Services. All members of the Disaster Control Organization are qualified disaster workers and are granted authority under the California Disaster Act of 1943, as amended, and Chapter 6 of the Alameda County Administrative Code.

This plan and its supplements shall be reviewed annually by the originators to establish that its contents are appropriate and adequate for current operations. The LLNL Fire Chief has the responsibility to insure that the review is accomplished, changes coordinated, and revisions published.

## V. EMERGENCY OPERATIONS GUIDES (EOG):

In order to facilitate implementation of the tasks that must be carried out in order to mitigate a disaster, simple checklist booklets have been developed for each position in the Disaster Control Organization. The booklet includes the checklists necessary to perform the duties of that position in all potential Laboratory disasters. The checklists are guides. They assume that the person in the position is a qualified individual who is performing tasks which closely resemble his day-to-day job.

The E.O.G.s also include an organization chart of the Disaster Control Organization, Position Duty Statements of each position, a copy of Figure 3, the Disaster Organization Activation Matrix, and a "Yellow Pages" or Resource Listing Section. This is referred to when ordering needed resources, human or hardware.

The E.O.G. is all that is needed by the member in order to understand his or her role and what is to be done. Master sets of E.O.G.s are kept in the E.O.C., Dispatch Centers, Fire Department Command Vehicle, and Command Post Trailer.

## VI. MISSION OF DISASTER ORGANIZATION:

In the event of any major emergency or disaster occuring on Laboratory property, or off-site exposing the Laboratory facilities, the Disaster Control Organization will initiate all appropriate action to protect life and property in the Laboratory and vicinity, and restore operational integrity as soon as possible. Duties will be simply an expansion of routine duties with a vastly increased workload to be accomplished in a compressed time frame.

## VII. ROLE OF ORGANIZATIONS:

1. Fire Department - Responds promptly to an emergency to evaluate the nature and severity and assumes initial control of the scene. At security or terrorism incidents, the senior Police Department Officer

on scene assumes initial control. The Emergency Dispatcher handles activation of the Disaster Control Organization unless function is handed off to the Police Department by the Emergency Dispatcher.

2. Security Department - Responds to an emergency to assist in pedestrian and vehicular traffic control and provide for protection of classified material. Security personnel may establish access control to buildings when so directed. The Security Department representative is the initial on-scene commander in a terrorism or a security incident. All requirements pertaining to security/police operations in an emergency will be coordinated through the Police Command Center (Bldg. 271).

3. Plant Engineering Department - Provides maintenance machinists and electricians on initial emergency calls. These basic units can be supplemented by other support groups such as welders, plumbers, carpenters, etc., depending upon the nature and extent of the emergency. The Plant Engineering Field Team is available to advise on the operation of facilities support functions in an emergency. All requirements pertaining to Plant Engineering operations are processed and controlled by the Plant Engineering Operations Center in Building 511.

4. Hazards Control Department - The Hazards Control Safety Team assigned to specific buildings will be available to advise on the control of hazardous conditions. When the E.O.C. is operational, the Safety

Team Leaders will provide information on hazardous conditions to the Hazards Control representative at that location.

5. Medical Department - The Medical Department advises the Disaster Control Director on medical matters. It also provides assistance to the Field Group.

6. LLNL Departments and Divisions - The line management of the Laboratory will implement, as necessary, their self-help plans to provide information, control and assistance to employees in a disaster situation in which Laboratory emergency services are extended beyond their capabilities to adequately respond. They will also provide advice and assistance to the Disaster Control Organization.

## VIII. POSITION DUTY STATEMENTS:

### 1. LLNL Director:

The Director of the Laboratory is responsible for the overall direction of all Laboratory operations, including disaster control. When the Director is away from the Laboratory (on travel status, vacation, etc.), he designates an Associate Director to act in his stead. However, the responsibility for directing disaster control operations at any time has been delegated to the "Disaster Control Director".

2. Disaster Control Director (Administrative Group):

The Disaster Control Director (DCD) is responsible for directing people, equipment, and operations either directly or indirectly involved in any disaster or disaster exercise. He also coordinates the activities between the Emergency Operations Center and Field Groups. He may delegate or assign this authority as he believes appropriate during any emergency or exercise. The Manager of Plant Services or his designated alternate (See Supplement #2) is the Disaster Control Director.

3. Deputy Disaster Control Director (Field Group):

The Deputy Disaster Control Director (DDCD) takes charge in the field and acts to control the disaster in accordance with the Disaster Control Plan. He implements the directions given by the Disaster Control Director and commands the field operations. He informs the DCD of the progress made to control the disaster. He also coordinates the return to work of disaster control personnel after control has been established. (In emergencies falling primarily within the purview of the Security Department, the Head of the Security Department or his designated alternate is the DDCD, otherwise, the Head of the Hazards Control Department or his designated alternate is the DDCD At Site 300, the Site Manager is the DDCD.)

4. Emergency Control Coordinator (Field Group):

The Emergency Control Coordinator (E.C.C.) assumes command of the incident from the initial on-scene commander, until he is relieved by the Deputy Disaster Control Director. In carrying out these responsibilities, the Emergency Control Coordinator directs the activities of the various emergency groups, decides the general course of field operations, and establishes a command post. Once relieved, the Emergency Control Coordinator assists the Deputy Disaster Control Director as necessary. (In emergencies falling primarily within the purview of the Security Department, the Chief, Protective Service Division or the Security Emergency Response Team Commander is the E.C.C., otherwise, the Fire Chief is the E.C.C.) The Emergency Control Coordinator has the authority to expand activation of the Disaster Control Organization in concert with this plan.

Other duties of the E.C.C. include the responsibility for the development of training programs and exercises to maintain the proficiency of emergency response personnel and maintenance of the Disaster Control Organization in a state of constant preparedness. The Emergency Control Coordinator also assists program personnel, Hazards Control Safety Team leaders, fire officers, security personnel and others in preparation of pre-emergency plans for each critical facility.

5. Plant Engineering Department Representative:
As the senior representative of the Plant Engineering Department he advises the Disaster Control Director on general operations of the Laboratory and support requirements to Laboratory programs and departments. He also provides administrative support to the Plant

Engineering personnel in the Field Group. He coordinates EOC requirements with the Head of the Plant Engineering Department located in the Plant Engineering Operations Center (Building 511).

6. Security Department Representative:
Advises the Disaster Control Director on general Security and Police operations during a disaster. He coordinates EOC requirements with the Security/Police Command Center (Building 271), and provides administrative support to the Security/Police field units. As previously noted the Head of the Security Department or his designated alternate will perform the function of Deputy Disaster Control Director in hostage or terrorist incidents.

7. Senior Fire Officer (Field Group):

In any major emergency not within the purview of the Security Department, the Senior Fire Officer present at the disaster scene assumes command until the Emergency Control Coordinator arrives. He supervises all fire-fighting, rescue, and first-aid operations. He also directs operations required to contain and control hazardous spills of flammable materials and water. At the scene of an emergency, the Senior Fire Officer directs the salvage operations necessary for immediate control of an emergency until relieved. He requests assistance from the Emergency Control Organization if necessary, and coordinates the activities of mutual-aid fire companies. He performs other emergency activities as directed by the

Emergency Control Coordinator. He is also responsible for assisting the Emergency Control Coordinator and the Hazards Control Safety Team Leader with formulation of plans for controlling emergencies.

8. Plans/Logistics Section (Administrative Group):

   A. Emergency Operations Center Manager
   B. Emergency Operations Center Information Coordinator
   C. Situation Status Display Team
   D. R.A.C.E.S.
   E. A.R.A.C.
   F. Supply
   G. Business Services
   H. Medical

The Plans/Logistics Section in the E.O.C. is responsible for the compilation, evaluation and display of information regarding the status and the emergency. It is also responsible for predictions of future problems and considerations in the emergency. The Plans/Logistics Section also makes provisions for needed resources, both human and hardware, from on-site or off-site in support of the emergency. They order the resources and notify the assembly points regarding the availability of the resources. The Section also arranges for medical advice, field medical assistance and triage, ambulance, and selections and notification of receiving hospitals.

8A E.O.C. Manager:

E.O.C. Manager activates and directs the Plans/Logistics Section in E.O.C. The manager is responsible for activating the E.O.C. facilities and overseeing the facility operation, oversees the operation of the Information Coordinator and insures E.O.C. security. He also oversees the RACES operation and interfaces with ARAC operation. The LLNL Emergency Preparedness Program Leader or his designated alternate is the EOC Manager.

8B E.O.C. Information Coordinator:

Informaticn Coordinator activates and oversees the operation of the Situation/Status Display Team and supervises the receipt, validation, flow and display of necessary information in E.O.C.

8C Situation/Status Display Team:

This team is part of the Plans/Logistics Section in the E.O.C. They are under direction of the Information Coordinator and have the responsibility for receiving incoming information regarding situation status and damage assessment, elimination of redundant messages, validation of information and the posting of the information on proper displays in E.O.C., and distribution of messages to various individuals in E.O.C.

8D RACES (Radio Amateur Civil Emergency Service - Administrative Group):

Federally authorized volunteer amateur radio operators group. The members are Laboratory employees. RACES will establish a communications net between Laboratory departments and divisions and the E.O.C. under direction of the E.O.C. Manager. They will relay damage assessment information and situation status information to the Plans/Logistics Section in E.O.C. They also provide a radio communications net throughout the Laboratory and will serve as a communications link for the Disaster Control Organization.

8E ARAC (Atmospheric Release Advisory Capability - Administrative Group):

Provides for the collection of real time meteorological, observational, and forecast data which is used to calculate air concentrations and ground deposition estimates that can be expected from the release of toxic materials.

8F Supply Operations Representative (Administrative Group):

As a member of the Administrative Group, assigned to Plans/Logistics, this individual provides administrative support to supply operations division personnel engaged in disaster control activities.

8G Business Services Representative (Administrative Group):

As a member of the Administrative Group assigned to Plans/Logistics, this individual provides administrative support to the Disaster Control Director. This includes advice on legal matters, procurement of off-site supplies and equipment from outside sources, activation of cafeterias, and the housing and feeding of disaster workers.

8H Medical Department Representative:

The Medical Department representative advises the Disaster Control Director and Emergency Control Coordinator about medical problems, cares for the injured, conducts triage, assists with the establishment of emergency medical aid facilities, and arranges for transportation to hospitals. Medical personnel respond to the Field Command Post as needed and are under the direction of the Field Group Commander.

9. Liaison (Administrative Group):

The Liaison Officer is responsible for all interagency interface, under the direction of the Disaster Control Director. Liaison maintains contact as necessary with FEMA, DOE, OES, Red Cross, NRC, FBI, Livermore City, Pleasanton, ALCO, and any other involved entities.

10. PIO (Administrative Group):

Public Information Officer writes and disseminates all releases to the media and public. He is under direction of DCD and all media releases shall be approved by DCD prior to release. PIO functions as contact point and host for on-scene media and other concerned groups from the private sector.

11. Off-Site Sampling Team (Field Group):

The Off-Site Sampling Team is responsible for field measurements, sample collection and preparation, and analysis of contamination during a disaster, and will inform the Disaster Control

Organization of the extent of the contamination. They also work outside the Laboratory perimeter to establish contamination levels beyond the Laboratory. The team may be given other assignments by the person in charge of the Field Group.

12. Support Groups (Field Group):

Various support groups are integrated into the Disaster Control Organization. These groups are under direction of the Plant Engineering Department and are assigned to the Field Group. They include riggers, welders, plumbers, electricians, carpenters, laborers, truck drivers, and other labor type positions.

## IX. TRANSITION OF OPERATIONS:

Any response to a major emergency or disaster must be appropriate to manage the scope of the incident. A disaster organization must "transition" or build up to match the incident acceleration.

Transition must be automatic and keyed to certain incident criteria. A disaster can be classified into various operational levels. Figure 3 describes these levels relating to potential Laboratory disasters. Figure 3 shows 3 levels. The incident builds from Level 0 to Level 3. This does not preclude going into a Level 3 mode immediately as may be the case in the event of a severe earthquake, nuclear attack, or intrusion by terrorists. Figure 3 sets forth the following information for each level:

1. Incident level
2. Classification of the level
3. Incident level criteria
4. Overall incident command transition (who is in charge at each level)
5. Field Operations Commander at each level
6. E.O.C. status
7. Field Command Post status
8. Entities involved at each level
9. Disaster Control Plan Activation by Group (Field and Administrative)
10. Necessary notifications.

| INCIDENT LEVEL | CLASSIFICATION | INCIDENT COMMAND CRITERIA | INCIDENT COMMAND TRANSITION | FIELD OPERATIONS COMMAND | EOC STATUS | FIELD COMMAND POST STATUS | ENTITIES INVOLVED | DISASTER CONTROL ORGANIZATION ACTIVATION | NOTIFY |
|---|---|---|---|---|---|---|---|---|---|
| Level Three<br>Activator: Deputy Disaster Control Director | Disaster: Serious incidents that cause extensive injury, or threaten to cause additional injury/death, incidents causing extensive damage, incidents involving major security problems, incidents with off-site implications.<br>High level lab-wide managerial efforts required for mitigation.<br>Intensified interagency interface. | Severe earthquake<br>Severe weather<br>Major fire<br>Criticality<br>Hostage incident<br>Terrorism<br>Nuclear war<br>Severe hazard materials incident<br>Severe radioactive release with off-site impacts<br>Off-site incident which exposes lab. (Hazardous materials leak, etc.) | Disaster Control Director in charge of overall incident. | Deputy Disaster Control Director in charge of field operations. | Activated by Emergency Dispatchers on orders of Deputy Disaster Control Director (Severe earthquake - automatic activation) | Activated | Admin. Group,<br>Field Group,<br>Tri-Valley Mutual-Aid,<br>OES<br>FBI<br>Sandia Natl.<br>FEMA<br>DOE<br>Programs.<br>Local Law Enforcement | Admin. Group,<br>Field Group,<br>Call-up by Sierra Dispatchers. | Admin. Group,<br>Field Group,<br>FBI<br>DOE<br>OES<br>Alameda County,<br>Livermore,<br>FEMA |
| Level Two<br>Activator: Emergency Control | Major Emergency: Incident requiring intensified lab-wide commitment and management of lab-wide resources towards mitigation. | Minor earthquake (gentle)<br>Hostile pickets, bomb found, multiple fires, serious hazardous material spill or leak, explosion, radioactive release to atmosphere on-site, threat of terrorism, utility/water supply failure lab-wide, sanitation system failure lab-wide. | Deputy Disaster Control Director in charge of overall incident at Livermore.<br>Site 300 incident - Site 300 Manager. | Deputy Disaster Control Director | Optional activation by Deputy Disaster Control Director. Call up by Emergency Dispatchers.<br>(Prepare for Level Three activation) | Activated | Program<br>Fire<br>Security<br>Hazards Control<br>Plant Engineering, Tri-Valley Mutual Aid,<br>Safety Teams,<br>ARAC. | Field Group activated<br>Call-up by Sierra Dispatchers. | Disaster Cont. Director<br>Field Group,<br>ARAC<br>PIO<br>FBI if applicable<br>DOE if applicable<br>[illegible] |
| Level One<br>Activator: Senior Fire or Police Officer | "Minor Emergency" Incident limited in scope requiring relatively minimal management/coordination | Bomb threat, simple fire alarm, small hazardous material spill, injury requiring first-aid, pickets outside lab, minor security problem. | Emergency Control Coordinator<br>Senior Fire or Police Officer<br>Program or Facility Supervisor. | Emergency Control Coordinator<br>Senior Fire or Police Officer<br>Program or Facility Supervisor. | Not activated | Activated by Emergency Control Coordinator -optional in some Security operations. | Program, Fire, Security, Safety Team Leader, Plant Engineering, Hazards Control | Optional as applicable by order of Emergency Control Coordinator. Call-up by Sierra. | Deputy Disaster Control Director,<br>Hazards Control<br>Plant Engineering<br>Safety Team Leader<br>Security, Fire. |
| Level Zero | Minor Problem Incident "In house". Does not actively involve emergency response units. | Minor injury, minor spill physical plant problem. | Program or Facility Supervisor. | Program or Facility Supervisor. | Not activated | Not Activated | Program | Not Activated | Fire Department<br>Security<br>Hazards Control<br>Plant Engineering |

(Fig. 3 - Disaster Org. Activation ____ Matrix)

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Transition:

The incident level designator provides a guide to assist emergency service personnel in understanding the mobilization sequence. This will key other Disaster Control Organization members, including dispatchers, as to what level of activation is occuring and what can be expected.

Figure 3 is a guide. Any level can be activated by the senior person in charge at any point in the incident as the situation may warrant. The key is the understanding of what level is in effect.

At Level 3, the E.O.C. is activated by the individual in charge of directing the emergency operations on instructions from the Deputy Disaster Control Director. The Deputy Disaster Control Director can order activation during Level 2 if desired. A severe earthquake triggers automatic activation.

Command transition will occur as follows. The levels of response to all Laboratory emergencies are outlined in Figure 3. This response builds up in accordance with the following steps:

| | | |
|---|---|---|
| * | The first employee to become aware of an accident must either report the accident immediately or have someone report it. | Level 0 |
| * | Immediately after an accident occurs, the Program Director of the involved area is responsible for safeguarding his personnel and taking control actions his group can accomplish safely. | Level 0 |
| * | Once the Fire Department arrives, the Senior Fire Officer coordinates the control efforts of all personnel | Level 1 |

present. He relinquishes this responsibility to an Emergency Control Coordinator when he arrives at the scene.

* If the Emergency Control Coordinator considers the Level 1
accident to be a major emergency or a disaster, the
Head of the Hazards Control Department (or Site Manager
if incident is at Site 300) is called and serves as the
Deputy Disaster Control Director to coordinate all field Level 2
activities. At level 3, the Manager of Plant Services
becomes the Disaster Control Director and takes administrative control of the entire operation through the
activation and operation of the LLNL Emergency Operations Center. Level 3

LLNL Emergency Operations Center (EOC):

Upon activation by direction of the individual in charge of emergency operations, the EOC will operate as the primary command center for the disaster operation. The Administrative Group will operate in the EOC. The EOC activities will include the following:

1. Overall incident command.
2. Coordinate all elements of the Disaster Control Organization.
3. Collect and display damage assessment information.
4. Collect and display situation status information.
5. Establish incident strategy and priorities, and allocate resources.

6. Coordinate the interagency interface & liaison.
7. Manage media interface and media releases.
8. Request resources from off-site (public & private sector).
9. Insure continuity of operations.
10. Manage recovery operations.

The currrent EOC location is in the basement of Building 271 (Police Department). The EOC may have to be relocated during a disaster if it is rendered inoperative by earthquake, hazardous gases, terrorism, fire, etc. An alternate EOC will be designated by the Disaster Control Director.

Self-Help Plans:

If the disaster involves all or a major area of the Laboratory and the emergency service elements are over committed, the departments and divisions will implement their self-help plans which will provide for collection, control, and assistance to employees at designated assembly areas. Departments and divisions will establish communication with the LLNL EOC and advise of the status of personnel and facilities.

## X. COMMUNICATIONS:

### A. General:

The Emergency Communications System serves three purposes. First, it provides a means for notifying proper authorities that an emergency exists. Second, it is used to alert emergency control

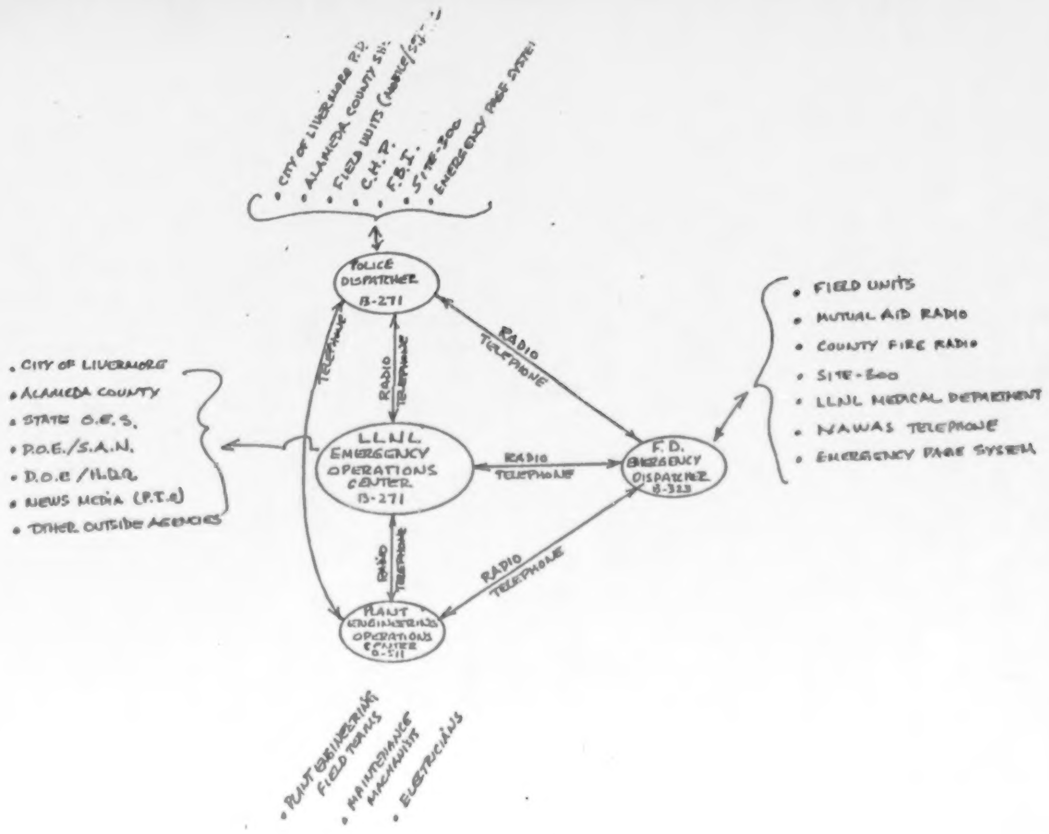
CITY OF LIVERMORE P.D.
ALAMEDA COUNTY SH.
FIELD UNITS (MOBILE/ST...
C.H.P.
F.B.I.
SITE-300
EMERGENCY PAGE SYSTEM
POLICE DISPATCHER B-271
RADIO
TELEPHONE
TELEPHONE
LLNL EMERGENCY OPERATIONS CENTER B-271
RADIO
TELEPHONE
F.D. EMERGENCY DISPATCHER B-323
RADIO
TELEPHONE
RADIO
TELEPHONE
PLANT ENGINEERING OPERATIONS CENTER B-511
FIELD UNITS
MUTUAL AID RADIO
COUNTY FIRE RADIO
SITE-300
LLNL MEDICAL DEPARTMENT
NAWAS TELEPHONE
EMERGENCY PAGE SYSTEM
CITY OF LIVERMORE
ALAMEDA COUNTY
STATE O.E.S.
D.O.E./S.A.N.
D.O.E./H.D.Q.
NEWS MEDIA (P.T.O)
OTHER OUTSIDE AGENCIES
PLANT ENGINEERING FIELD TEAMS
MAINTENANCE MACHANISTS
ELECTRICIANS

Figure 4

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forces as well as Laboratory employees. Third, it provides tactical communication lines between various units and personnel combating the emergency. The communications system (Figure 3) which includes radio, telephone, manual and automatic alarm systems, and messengers tie in to a variety of on-site facilities as well as local, state, and federal agencies.

### B. Notification:

The Emergency Dispatcher is responsible for notifying individuals of the Administrative and Field Groups whenever a major emergency or disaster has occured or is imminent.

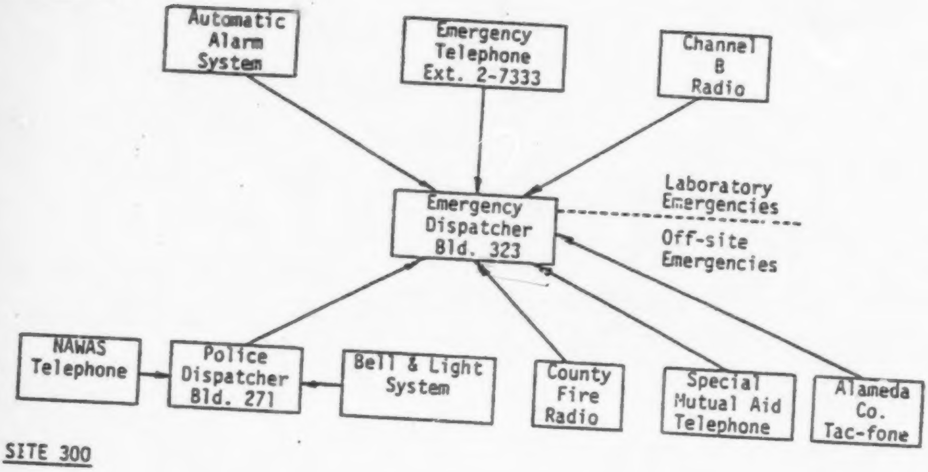
This function may be handed off to the Police Department Dispatcher by the Emergency Dispatcher if the latter is overloaded. Call up is requested by the person in command of the incident.

When notifying the groups, the dispatcher calls the first member of the particular team being activated. The contacted member, in turn, is responsible for notifying other members of his group. (Disaster Control Plan Supplement #2 lists these groups.)

### C. Emergency Call List:

Both Police and Emergency Dispatchers have a current Emergency Call List that is kept up to date by the Emergency Control Coordinator. Members of the Disaster Control Organization are responsible for informing the Emergency Control Coordinator of changes to the Call List. All changes are coordinated through the Emergency Preparedness Program Leader.

LIVERMORE


Automatic Alarm System
Emergency Telephone Ext. 2-7333
Channel B Radio
Emergency Dispatcher Bld. 323
Laboratory Emergencies
Off-site Emergencies
NAWAS Telephone
Police Dispatcher Bld. 271
Bell & Light System
County Fire Radio
Special Mutual Aid Telephone
Alameda Co. Tac-fone

SITE 300

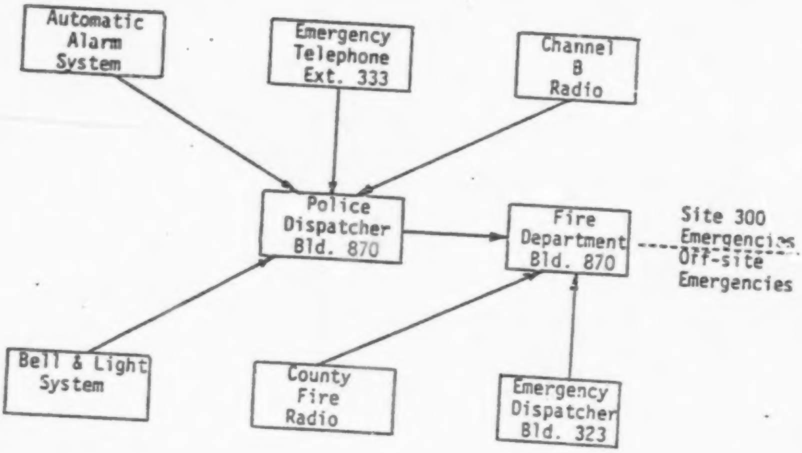

Automatic Alarm System
Emergency Telephone Ext. 333
Channel B Radio
Police Dispatcher Bld. 870
Fire Department Bld. 870
Site 300 Emergencies
Off-site Emergencies
Bell & Light System
County Fire Radio
Emergency Dispatcher Bld. 323

Fig. 5 Emergency alarm systems at Livermore & Site 300

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### D. Emergency Alarms:

Most emergency alarms are received by the Fire Department through emergency telephone extension 2-7333 (Ext. 333 at Site 300). Other alarms are received through automatic alarm systems.

A diagram of the emergency alarm systems is presented in Figure 4. A special telephone communicating system is used to alertemergency forces at the Laboratory. In addition, speakers connected to emergency telephone number 2-7333 permit emergency calls to be monitored. The Channel B radio system also is used to announce emergencies. A disaster paging system at the Livermore Laboratory, air raid sirens, or both, announce large scale accidents or imminent air raids. Radios and telephones are used exclusively at Site 300 to alert personnel of emergencies. Warnings of imminent enemy attack are received either through a special telephone connection with the North American Warning Alert System (NAWAS). Figure 5 diagrams the systems to be used to alert Laboratory personnel at Livermore and Site 300. Disaster Control Plan Supplement 1 provides further details on the LLNL Emergency Communication System.

## XI. OFF-HOURS EMERGENCIES:

In the event of a major emergency or disaster occurring at time other than the normal workday period, the operations will generally follow the transition sequence previously described. The Fire Department, Security Department, and Plant Engineering Department maintain groups responsible for responding to Laboratory emergencies on an around-the-clock basis.

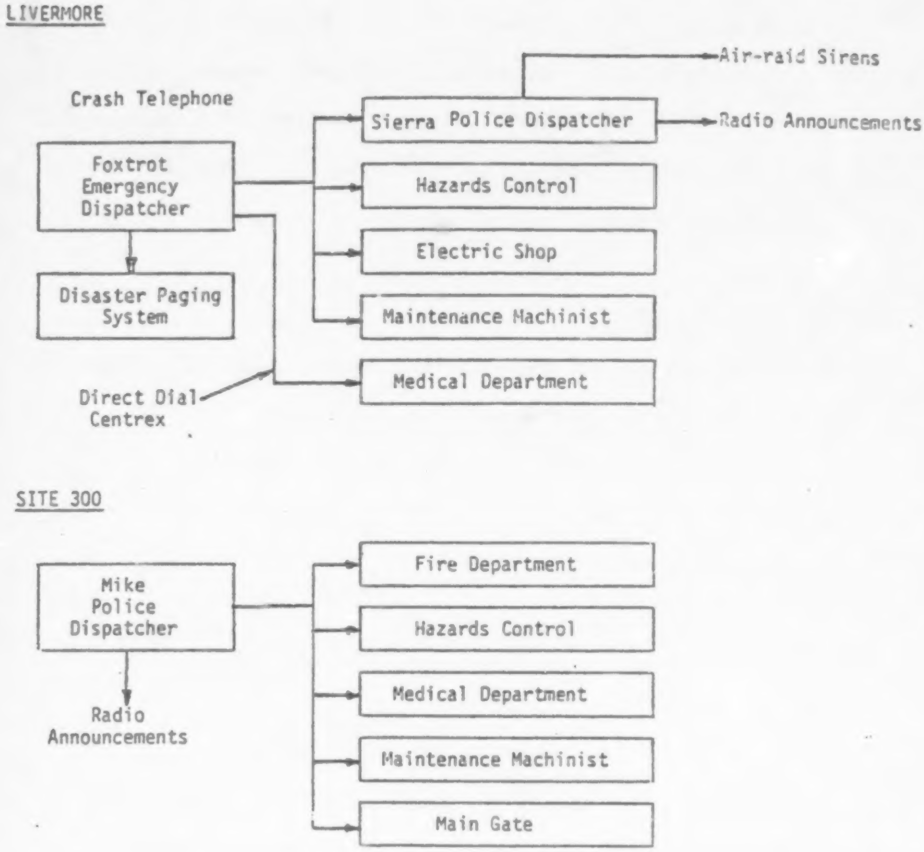
LIVERMORE
Air-raid Sirens
Crash Telephone
Sierra Police Dispatcher
Radio Announcements
Foxtrot Emergency Dispatcher
Hazards Control
Electric Shop
Disaster Paging System
Maintenance Machinist
Direct Dial Centrex
Medical Department
SITE 300
Fire Department
Mike Police Dispatcher
Hazards Control
Medical Department
Radio Announcements
Maintenance Machinist
Main Gate

Fig. 6 Group Alerting System for Livermore & Site 300

The Police Department Watch Commander will take charge initially in incidents involving security, otherwise, the Fire Department Duty Chief will take initial response action. In either instance, the individual in charge will advise their immediate supervisor and determine what further emergency response personnel and/or resources are required.

## XII. SUPPLY AND LOGISTICS:

Many special purpose and common types of vehicles at the Laboratory are available for use during emergencies. The Emergency Control Coordinator maintains a complete inventory of this equipment in Supplement 13 to this Disaster Control Plan. It is recommended that Members of the Disaster Control Organization will become familiar with this inventory list.

## XIII. FALLOUT SHELTERS:

The Laboratory maintains a number of fallout shelters capable of housing approximately 11,000 people. The shelters are stocked with necessary medical supplies and radiological instruments (bring food). Fire Safety Division is responsible for marking and stocking these shelters.

Shelters are managed by the responsible Laboratory departments and divisions. They are activated by the Laboratory Disaster Control Director. The Shelter Managers may refer to the Shelter Manager's Handbook (Supplement #9) as necessary. Shelter locations are shown on the map, Figure 6.

Shelter locations and travel routes are included in the Self-Help Plans for each program. Each program is assigned specific shelter locations. Lab shelters are also designated for use during relocation of citizens from the City of Livermore.

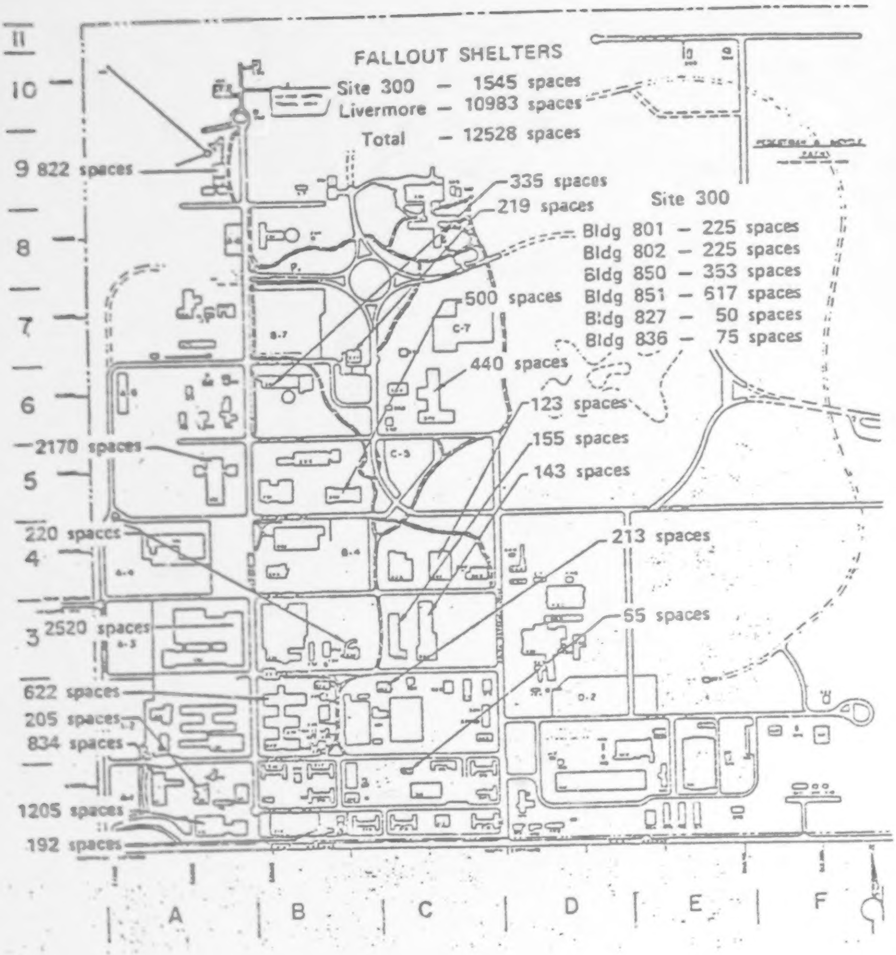
FALLOUT SHELTERS
Site 300 — 1545 spaces
Livermore — 10983 spaces
Total — 12528 spaces
Site 300
Bldg 801 — 225 spaces
Bldg 802 — 225 spaces
Bldg 850 — 353 spaces
Bldg 851 — 617 spaces
Bldg 827 — 50 spaces
Bldg 836 — 75 spaces
822 spaces
335 spaces
219 spaces
500 spaces
440 spaces
123 spaces
155 spaces
143 spaces
2170 spaces
220 spaces
213 spaces
2520 spaces
65 spaces
622 spaces
205 spaces
834 spaces
1205 spaces
192 spaces
11
10
9
8
7
6
5
4
3
A
B
C
D
E
F

Fig. 7 Fallout shelter locations and accommodations.

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## XIV. DISASTER CONTROL PLAN SUPPLEMENTS:

The basic Disaster Control Plan is augmented by a number of supplements that describe in more detail the equipment and disaster control systems available during emergencies. The following supplements, when combined with this basic manual, comprise the complete Disaster Control Plan.

| Supplement | Title |
|---|---|
| 1 | LLNL Emergency Communicatons |
| 2 | Emergency Callout List |
| 3 | Heavy Equipment Available for Emergencies |
| 4 | LLNL Water Supply System - Emergency Water Supply Plans |
| 5 | Respiratory & Other Protective Equipment for Emergencies |
| 6 | Emergency Assistance Team |
| 7 | Off-Site Sampling Team (OSS) |
| 8 | Operations Plan for Emergency Operations Center |
| 9 | Shelter Manager's Handbook |
| 10 | Public Information |
| 11 | Traffic Control Plan |
| 12 | Security (classified) |
| 13 | Fire Department Equipment and Facilities |
| 14a&b | LLNL Contract/Charter Aircraft Emergency Procedures |
| 15 | Response Plan for Fire in an Explosive Area |
| 16 | Bomb Threat Response Procedures |
| 17 | Medical Emergency Plan |
| 18 | Hazardous Materials Spill Plan |

Copies of the supplements may be obtained from the Fire Safety Division of the Hazards Control Department (Ext. 2-5194).

## PHRASES OF PARLIAMENTARY LANGUAGE

### Allowing Amendments

| | | |
|---|---|---|
| | Chair: | "Is there any discussion of the Chairman's recommendation in this program area?" |
| | Response: | "Madam Chairman, I have an amendment." |
| | Chair: | "The Gentleman will state his amendment." |
| | Response: | OFFEROR WILL READ AND EXPLAIN HIS AMENDMENT |
| | Chair: | "Is there any further discussion on the Gentleman's amendment?" |
| | Response: | NO ONE RESPONDS |
| PREVIOUS QUESTION | Chair: | "Hearing none, the question is on the amendment offered by the Gentleman from ________, Mr. _______. All those in favor signify by saying "aye"; opposed "no". |
| | | (The "ayes" have it and the amendment is agreed to.) |
| | | (The "no's"have it and the amendment is not agreed to.) |
| RECORD VOTE DEMAND | Response: | "Madam Chairman, I demand a recorded vote." |
| | Chair: | "The Gentleman demands a recorded vote. The clerk will read the role." AFTER THE NOD BY THE CLERK "The clerk will report." CLERK REPORTS NUMBERS |
| | | (The "aye's" have it and the amendment is agreed to.) |
| | | (The "no's" have it and the amendment is not agreed to.) |
| DIVISION VOTE DEMAND | Response: | "Madam Chairman, I ask for a division." |
| | Chair: | "A division has been requested. All those in favor of the amendment raise their hands." ALLOW TIME TO COUNT "All those opposed raise their hands." ALLOW TIME TO COUNT "The clerk will report." CLERK REPORTS |
| | | (The "aye's" have it and the amendment is agreed to.) |
| | | (The "no's" have it and the amendment is not agreed to.) |

## Approval of Programs

Chair: "Are there any further amendments to the _______ program area?"

"Hearing none, the Chair will entertain a motion that the Subcommittee approve the program, as amended."

AFTER THE MOTION

"The question is on the motion offered by the Gentleman from ______, Mr. _____. All those in favor signify by saying "aye", opposed "no".

(The "aye's" have it, the motion is agreed to and the program is approved.)

Possible Response: "Madam Chairman, I demand a recorded vote."

OR

"Madam Chairman, I request a division."

Chair: RESPOND APPROPRIATELY

Chair: "The next program area is ________. Dr. Dugan, please continue."

Staff: BRIEFING

Mr. WINN. From that there may well be some additional questions that the committee would like to submit in writing.

Mr. DAVIS. Certainly.

Mr. WINN. Thank you very much. Thank you, Madam Chairman.

Mrs. BOUQUARD. Thank you very much, Mr. Winn.

Mr. Volkmer?

Mr. VOLKMER. Your experience, as I understand it, with the act has been that it has been adequate so far; is that correct? Is that basically your testimony?

Mr. DAVIS. Insofar as our research and development activities are concerned, it certainly has been.

Mr. VOLKMER. Have there been accidents?

Mr. DAVIS. The only accident under Price-Anderson on which any payment has been made is the SL-1 accident.

Mr. VOLKMER. Approximately what was the total amount claimed?

Mr. DAVIS. $70,000 is my recollection.

Mr. VOLKMER. $70,000.

Mr. DAVIS. $70,000; there were some other claims, but I don't think they were accepted.

Mr. VOLKMER. No further questions.

Mrs. BOUQUARD. Thank you, Mr. Volkmer.

Mr. Weber?

Mr. WEBER. Thank you.

Mr. VOLKMER. Could I take that time back. I have one more question.

Mr. WEBER. Certainly.

Mrs. BOUQUARD. The time is yours.

Mr. VOLKMER. The other one is: What about an evacuation for a potential accident that never happens? Have you any opinion on that, whether it should be or should not be covered?

Mr. DAVIS. I'm sorry, sir.

Mr. VOLKMER. Evacuation on potential accidents. Let's say nothing actually happens but because of fear of something going wrong, some things haven't been working right, so there is an evacuation required either by State or Federal Government agency or somebody.

Mr. DAVIS. Well, I think it would depend on the circumstances whether one might want to order an evacuation.

Mr. VOLKMER. All right. We'll call it a precautionary evacuation. Should that be included?

Mr. DAVIS. Well, I think any case where you are considering an evacuation, you have to consider the circumstances under which one would be required or recommended, one, and that could either be precautionary or because you actually have an incident. I think that would have to be somebody's judgment at the time.

Mr. VOLKMER. But should there be coverage for precautionary evacuations? Let's say nothing actually happens.

Mr. DAVIS. Well, in looking at any potential accident, I think you have to look at the whole spectrum of responses, and I would certainly consider a precautionary evacuation as one of the options that ought to be looked at, yes, sir.

Mr. VOLKMER. And that should be covered under the act, then, the Price-Anderson Act?

Mr. DAVIS. Well, if it is ordered by an indemnified Government contractor, then presumably it is covered if it is something which is directed by the Government.

Mr. JOHNSON. Mr. Volkmer, if an evacuation is ordered by the Federal Government and it takes place and an incident occurs, there is no question that Price-Anderson covers. If an incident does not occur and harm results as a result of the Government's direction, Price-Anderson does not apply to that. However, there would be a claim presumably against the Government under the Federal Tort Claims Act if the direction was given——

Mr. VOLKMER. Oh, yes; but that's a lot more involved than just Price-Anderson.

Mr. JOHNSON. I'm merely explaining the situation, sir. And lastly, if there is no order by a Federal agency and no incident, but nevertheless evacuation takes place by the individual citizen, there is no coverage. The question that is raised in the GAO report is whether there should be under those circumstances. It would be our view that if people evacuate without acting on an official announcement, there should not be a basis for holding the Federal Government responsible.

Mr. VOLKMER. OK; but what about the other? What about where the contractor or the Federal Government orders the evacuation but there is no incident?

Mr. JOHNSON. Well, as I say, coverage is not available under Price-Anderson at the moment for that.

Mr. VOLKMER. Well, I'm asking you should it be.

Mr. JOHNSON. And I think that the likelihood of that could well be evaluated at the time that we come to the Congress in 1983 with recommendations for extension or revision of the Price-Anderson Act.

Mr. VOLKMER. You have no opinion at this time?

Mr. JOHNSON. We don't think that the requirement is so compelling that it requires an immediate adjustment to the Price-Anderson Act. But it is a matter that should be studied.

Mr. VOLKMER. Have we had any precautionary evacuations?

Mr. JOHNSON. I will search the record. If any come to our mind, we will put them in the record.

[The information follows:]

Department of Energy records indicate that there have been no precautionary evacuations as a result of an incident at a DOE nuclear-related installation.

Mr. VOLKMER. Where it has not been on their own. Not where the citizen have decided, but where it's been an order. Just notify us. Send us a letter and we will put it in the file.

Thank you, Madam Chairman.

Mrs. BOUQUARD. Thank you.

Mr. Weber.

Mr. WEBER. Thank you.

Mr. Davis, let me ask you the same question I asked Mr. Weiss. Does anybody in the Department have a good current estimate, or guesstimate even, of what the potential liability might be in a case like this? Five hundred million is not a realistic figure that we can depend on. Does anybody have a figure?

Mr. DAVIS. For what assumption?

Mr. **Weber**. For what the potential liability in the case of an accident might actually be. For what the potential damage might actually be.

Mr. **Davis**. Well, there have been a whole series of studies, starting with the famous WASH-1400, or whatever it was, in the early days, trying to assess the possible damages as the result of various kinds of nuclear incidents. These have been followed by a whole series of what I think you'd have to describe as speculations. It all depends on your assumptions, how serious you think the occurrence might be, and what its probability is. The result is we have ended up over the years with enormous ranges of estimates of what the potential consequences might be, a very great degree of imprecision and wide ranges in individual studies, a great deal of discussion about the validity of the studies, and I would say that the odds on anybody being able to come up with a definitive figure are extremely remote. We simply don't have a methodology or a way of arriving at the figures nor the criteria by which one ought to pick the figure.

Mr. **Weber**. However questionable the assumptions might be and however unreliable the final figure might be, does the Department have any figures that they are using?

Mr. **Davis**. We do not have a figure. We simply don't know how to arrive at one.

Mr. **Weber**. Let me try and make sure I understand how the act works, then. If there were some kind of a disaster and there was damage substantially above the $500 million level, do I understand you correctly that then the recourse of damaged parties is in the hands of the Congress?

Mr. **Davis**. That is correct, yes, sir.

Mr. **Weber**. Suppose the Congress finds itself in budgetary situations such as the one we are in today and decides that it can't afford anything? Is there any legal recourse for damaged, injured parties?

Mr. **Davis**. None that I know of.

Mr. **Weber**. Not at all. From any other act?

Mr. **Johnson**. If Price-Anderson covers the incident, it's the exclusive remedy. There wouldn't be another one. A lawyer might speculate if it were found that the DOE employee caused the accident there might be an action under the Federal Tort Claims Act. But since our reactors are operated by contractors, rather than DOE employees, it has to be pretty largely an academic speculation.

Mr. **Weber**. Well, let us suppose for a minute the potential damage is substantially more than half a billion dollars. Presumably, if we are trying to protect the public, we are saying that there is at least a chance that that kind of an accident might occur. It sounds to me that what you are telling me is the act as it presently exists does not protect the public; it serves the purpose of protecting industry and encouraging the development of the industry; it meets that objective that was laid out in, I believe, the chairman's testimony, but it does not meet the other objective, which is to protect the public. Is that correct?

Mr. **Davis**. Well, it is conceivable that it might not. I think the thing you have to bear in mind here is you are really dealing, in any kind of a mathematical sense, with a collection of potential damages versus some kind of a probability curve. And when you are looking at these very large potential losses, the probability becomes extraordinarily small. So that you might say there is a very, very small chance that you are not adequately protecting the public. The question really is: Is the limit you have selected high enough so that it is likely to protect the public within a range of what you might consider to be very small but still conceivable range of accidents? It is not a single event. There is a whole spectrum of things that might happen. So it is a probability versus a potential loss curve, and what I was trying to describe before is the fact that we still don't know how to draw that curve, much less pick a point on it.

Mr. JOHNSON. The number could be increased. The question is, if it was increased to $1 billion, the next question would be what if the accident exceeded $1 billion or $10 billion or whatever might be conjured up. The congressional decision in 1975, as I said earlier, was that protection of the public is guaranteed by the statement in the act that the Congress would take up the question of further relief to the public beyond the $500 million which was immediately available.

Many people talk about the $500 million as being all there is. But that is not the congressional intention as we understand it. The congressional intention is that the $500 million is the sum that is available for immediate needs but not a limit on the liability or the relief that is available to the public. It would require, since the Federal Treasury is the one at risk, a congressional decision. But that's only appropriate because the Congress is the guardian of the Federal Treasury. But the Congress is also responsive to the people, and we believe in an event of this character, the one hypothetically set up, well more than $500 million, or even $1 more than $500 million, the Congress can be relied upon.

Mr. WEBER. I understand that. But it seems almost irrelevant, because if we have, for instance, a disaster fund and SBA or Farmers Home or something run short and there is a disaster Congress has it within its power to advance additional moneys, and so even without Price-Anderson it would seem to me that that protection which is basically the protection of the benevolence of Congress at a given period of time exists. But the act itself, it doesn't seem to me, provides any real protection to the public. The only event in which the public would need that protection, which is the event, however unlikely it may be, of a serious accident.

Mr. JOHNSON. Well, we think that the combination of the immediately available fund to deal with the immediate needs, plus the commitment of the Congress, much firmer than in the flood protection or title damage provisions, to review the matter and provide such further relief as the Congress deems appropriate is a sufficient basis for reliance under the circumstances.

Mr. WEBER. Thank you. I have no more questions.

Mrs. BOUQUARD. Thank you, Mr. Weber.

I would like to go through some more questions we would certainly like to be included in the record.

Mr. Davis, if DOE contractors were required to purchase insurance, would you expect that there might be a security problem *associated with an insurance company's desire to inspect the premises?*

Mr. DAVIS. Well, one of the reasons that we do not require insurance, quite aside from the fact we'd be paying our own insurance bills, is that we have our own inspection and safety systems, and many of the facilities which are covered, or many that would be covered, are in fact national defense programs facilities, and there would certainly be a security problem.

Mrs. BOUQUARD. Is DOE itself covered by Price-Anderson Act?

Mr. DAVIS. DOE itself is not.

Mrs. BOUQUARD. Is it possible that DOE could itself be responsible for a serious nuclear accident, aside from its contractor?

Mr. DAVIS. I think it is theoretically possible. There are a few very limited operations carried out by DOE employees, but almost all of our activities and almost all of those which might lead to any incident are carried out by our contractors who are indemnified.

Mrs. BOUQUARD. Should the act be changed then to include DOE?

Mr. DAVIS. I do not believe so, no.

Mrs. BOUQUARD. Mr. Iacobellis identifies a problem for DOE on page 4 or his testimony in the criteria that DOE must use to extend the liability coverage of the Price-Anderson Act to its contractors; and that is that DOE must make a judgment as to whether there is a risk of a substantial nuclear incident. He seems to feel that this places DOE in a very difficult position. How do you feel about this criteria, whether there is a risk of substantial nuclear incident?

Mr. DAVIS. Well, this is a determination that has to be made. So far as I am aware in having reviewed it, it does not seem to be any kind of a significant problem when making the proper determination.

Mrs. BOUQUARD. Mr. Davis, does DOE or any other agency of the Federal Government as a rule buy insurance for their activities that they undertake, or are they really essentially self-insured?

Mr. DAVIS. My understanding is that they are all basically self-insured.

Mrs. BOUQUARD. Thank you.

Just a few more, hurriedly.

Under the Price-Anderson Act, could the Department extend coverage to the operator of a waste disposal facility?

Mr. DAVIS. Yes, I believe so.

Mrs. BOUQUARD. Would the waiver-of-defenses provision apply to an extraordinary nuclear occurrence at such a repository?

Mr. DAVIS. I don't believe so, but maybe, Tenney, you could try to answer that.

Mr. JOHNSON. Arguably, under the provisions of the wording of the law, one could say that an extraordinary nuclear occurrence at a waste repository would not be covered by the Price-Anderson Act. The reason for that is that section 170[n] is the congressional statement of the waiver of defenses.

Let me go back and correct a previous statement I made. If you have a waste repository and it is under contract to the Department of Energy and an extraordinary nuclear occurrence takes place, the Price-Anderson Act still applies; however, the provisions of law that call for a waiver of defense, thus making it easier to sue, would not take place. I had indicated earlier that Price-Anderson didn't apply. That was not correct. Price-Anderson would apply. But the so-called waiver of defenses, the theoretical legal defenses, would not take place.

However, this is, at this time, I have to say, a disputed matter among the lawyers. It is possible, in my judgment, to interpret 170(n)(1)(C), which refers to providing for a waiver of defense during the course of contract activity, that if the occurrence arises out of or results from the possession, operation, or use by Commission contractor of a device utilizing special nuclear materials or byproduct material. Now, historically the word "device," which is undefined in the act, has been thought to refer only to weapons. But it is not beyond the possibility that the court, or indeed the Attorney General, would have authority to waive these defenses or could interpret that language broadly where it was really necessary to avoid legal arguments and get to rapid settlement.

Mrs. BOUQUARD. Well, do you think that we should clarify the issue, then, Mr. Johnson? Modify it so that the waiver of defenses provision could be applicable to an ENO at the repository site?

Mr. JOHNSON. Well, as the national policy on waste repositories is finally decided upon, it is an area that should be considered at the time when the Department and the Commission report to the Congress in 1983 on the revision of the Act. But again, it is not a problem that seems an immediate danger.

Mrs. BOUQUARD. Thank you.

Mr. Weber?

Mr. WEBER. Thank you, Madam Chairman.

I presume that the act also covers damage to individual health or to water or land quality from radiation exposure of long periods of time. Is that correct?

Mr. JOHNSON. Yes, sir.

Mr. WEBER. The statute of limitations is 20 years?

Mr. JOHNSON. Under the Price-Anderson Act?

Mr. WEBER. Yes. Is that correct?

Mr. JOHNSON. Let me take counsel.

It's 20 years, sir, for an extraordinary nuclear occurrence. It's 3 years from when the damage is first discovered, but in no event more than 20 years. From the event, for example, of a long delayed illness that is traceable to an incident, the 3 years wouldn't apply.

Mr. WEBER. It would always be the 3-year period of time after the discovery of the damages.

Mr. JOHNSON. Yes, sir, subject to the 20-year limitation.

Mr. WEBER. Thank you.

Mr. JOHNSON. Provided that that damage could be traced to the incident.

Mrs. BOUQUARD. I would like to refer to our counsel, Mr. Ventre, for a clarifying statement.

Mr. VENTRE. It is my understanding on that provision of the statute of limitations that the Price-Anderson Act wasn't intended to supersede the State law and that State law on that subject could supersede the Price-Anderson Act. And State law in many cases, for example, one State that I am particularly familiar with, could be 3 years from whenever the injury became apparent, regardless of the date of the actual incident, and in that case the Price-

Anderson Act, the 20-year limitation wouldn't apply and you would have a 3-year statute of limitations from whenever the injury was perceived, which would seem to extend the statute of limitations. Am I correct in that?

Mr. JOHNSON. I think you are, yes, sir.

Mr. VENTRE. Thank you.

Mrs. BOUQUARD. Thank you very much.

Two final questions. On page 10 of the report, GAO recommends that DOE undertake a study to assess the accidents that could occur at DOE facilities. What is the Department's position on this recommendation?

Mr. DAVIS. I think this really relates to the discussion with Mr. Weber in that we don't really think we have a very good basis at the present time for trying to undertake a study which would lead to a definitive new estimate of what the potential damages or potential limit ought to be. It is something that we certainly can consider in terms of the review that Mr. Johnson spoke of. But I find it most difficult myself to try to conceptually visualize just how you would come to some conclusion which would be other than a new arbitrary number.

Mrs. BOUQUARD. There is just no actuarial base to work on?

Mr. DAVIS. There's no actuarial base to work on. The great variety of studies have been made mainly on power reactors. It is extremely difficult to see how one would come to a new number.

Mrs. BOUQUARD. Section 170[p] of the Price-Anderson Act requires that the Commission submit a report by August 1, 1983, to Congress on the need for continuing or modifying the Price-Anderson Act. Since the Commission is now the Department of Energy and the NRC, what has DOE done toward the preparation of this report, Mr. Davis?

Mr. DAVIS. Well, we are planning to participate in the preparation of a report to respond to that requirement. I don't know that I can say what we've done specifically so far.

Mrs. BOUQUARD. Are you working with NRC?

Mr. DAVIS. We are anticipating working with NRC, yes.

Mrs. BOUQUARD. Thank you very much, both of you, for your very fine testimony. We certainly appreciate your being with us today.

Next we would like to welcome Mr. J. Dexter Peach, who is Director of the Energy and Minerals Division of the GAO. We appreciate your being with us also.

Mr. Peach, we have your prepared testimony. It will be included in the record of this hearing. You may proceed as you wish.

## STATEMENT OF J. DEXTER PEACH, DIRECTOR, ENERGY AND MINERALS DIVISION, U.S. GENERAL ACCOUNTING OFFICE, ACCOMPANIED BY JOHN HARMAN, GROUP DIRECTOR, AND CLIFF FOWLER, SUPERVISORY EVALUATOR

Mr. PEACH. Madam Chairman, let me first introduce my colleagues with me at the table. On my right is Mr. John Harman, who is in charge of nuclear work at the Energy and Minerals Division, and on my left, Mr. Cliff Fowler, under whose supervision the study that we performed at your request of the Price-Anderson Act was performed.

Mrs. **Bouquard**. Happy to have you with us also, gentlemen.

Mr. **Peach**. Madam Chairman, I will proceed with going through my statement, perhaps summarizing in some areas that have been covered by other witnesses, since it does present a rather cogent summary of the report that we prepared for you.

Mrs. **Bouquard**. And we certainly appreciate the report that you prepared for the subcommittee, Mr. Peach.

Mr. **Peach**. Our report is being released this afternoon. This report and an earlier one we issued in August 1980 on Price-Anderson coverage for commercial nuclear facilities form the principal basis of my statement.

The Price-Anderson Act covers not only nuclear facilities, but is probably unique in its application of what is commonly referred to as umbrella coverage. In addition to covering prime contractors responsible for operating the facilities within the DOE nuclear energy complex, the act also covers subcontractors, vendors, suppliers, architect-engineers, and transporters who perform work in connection with a particular prime contractor's nuclear activity.

Moreover, the act even covers past work that could cause an accident at some future date. Thus the contractor who performed past work would be covered even though there is no existing contract. Under the umbrella coverage, members of the general public would be covered even if a nuclear accident was caused by a terrorist or a saboteur. Accordingly, the public would be compensated regardless of who causes an accident at a nuclear facility covered under the Price-Anderson Act or during the transportation of nuclear materials to or from that facility. This coverage applies equally to both nuclear facilities licensed by the NRC as well as those operated for the DOE by private contractors.

Currently DOE has 75 prime contracts containing specific Price-Anderson indemnity agreements. These prime contracts provide coverage for about 280 different nuclear facilities. In contrast, there are 178 NRC licensed facilities covered by the act. Moreover, there are about 71,000 subcontractors performing work for various DOE nuclear facilities that are also covered by the act.

Over the past 3 months we reviewed the act and its major provisions as it pertains to DOE's nuclear energy research and development activities. As a result of our work we believe the liability protection provided DOE contractors by the Price-Anderson Act should be continued. We arrived at this position after carefully considering the current U.S. position to foster the develoment of nuclear energy and the availability of other forms of insurance for nuclear activities.

The liability protection provided DOE contractors by the Price-Anderson Act still appears to be necessary because many of the reasons for originally passing the act still exist today. For example, catastrophic nuclear accidents causing severe public consequences could still occur; sufficient private insurance to cover such consequences is still unavailable; and, based on our discussions with DOE and contractor officials and officials from private companies outside the DOE nuclear complex, it appears that private industry is still unwilling to assume the risks of such accidents without the kind of financial protection the act now provides. Furthermore, the public is provided greater financial protection as a result of the act than without it.

Although the Price-Anderson Act places a cap on the amount the public could collect for damages resulting from a nuclear accident, it does assure that some funds will be readily available when needed. Without the Price-Anderson Act victims of nuclear accidents would have to sue for damages, a process that could take several years. And even then, the right to sue does not guartantee one's ability to collect. Without any protection—Government or private insurance—a catastrophic nuclear accident could bankrupt a contractor, and thus injured members of the public would have no assurance they could recover adequate compensation, if indeed they could get any at all.

Even if DOE nuclear contractors were covered by the more conventional self-insurance policies of the Federal Government—as is now done for some DOE nonnuclear contractors—the public would receive less financial protection than that currently provided for catastrophic nuclear accidents by the Price-Anderson Act. Such shortcomings would generally include the following:

Public compensation would be subject to the availability of appropriated funds. As a result, the amount of coverage would be uncertain. Under the Price-Anderson Act, the public is assured of up to $500 million for DOE-related accidents.

Protection from the actions of subcontractors and suppliers would not automatically be provided through Government self-insurance. On the other hand, the Price-Anderson Act's umbrella coverage provides this unique feature.

Certain contractor actions, such as acts of willful misconduct or gross negligence, could void Government self-insurance coverage. Thus, victims of a nuclear accident would be left without any coverage under these circumstances.

Victims of a nuclear accident would have to establish that the accident occurred because of some fault on the part of the contractors. The Price-Anderson Act provides protection regardless of why the accident occurred.

In our earlier report on the Price-Anderson Act as it applies to NRC-licensed facilities we concluded that removing the act's protection for commercial facilities without replacing it with comparable liability insurance coverage would not be in the Nation's best interest. We believe the same is true for DOE contractor activities. However, in examining the act's provisions we found some inadequacies that in our opinion need to be corrected to provide a more equitable scheme of protection for nuclear accidents. Specifically, we identified three problems.

First, the total amount of money available to the public to cover catastrophic accidents is greater for an accident occurring at a commercial nuclear facility than at a DOE-owned, contractor-operated facility. Currently, the difference is $60 million. But beginning in about 1982 when 80 power reactors are operating, each additional commercial power reactor that comes on line will increase the difference by $5 million per reactor. Consequently by 1987, when the Price-Anderson Act is due to expire, the difference could be as much as $330 million. In our opinion, it is difficult to justify two different levels of public financial protection depending upon such an arbitrary distinction as whether a nuclear accident occurs at a commercial licensed activity or a Government contractor operation.

Second, as a result of the legal limit on liability the public's potential loss from a nuclear accident continually increases as inflation erodes away the assured level of financial protection. While the act assures $500 million will be available in the event of a nuclear accident, the public is not guaranteed that it will receive additional compensation should damages exceed the limit, only that Congress will consider providing additional compensation. Also, while the total amount of available funds has remained the same over the years, the potential costs of a catastrophic accident have risen due to inflation. As a result, the public receives less financial protection today than it did in 1957 when the act was passed. For example, $500 million in 1957 dollars is only worth about $183 million today. Or, to be equivalent to the 1957 coverage afforded by the act, the limit would have to be increased to about $1.4 billion. Consequently, for such a scheme to be equitable to both the industry and the public, we believe the limit on liability should be increased.

Finally, because the definition of a nuclear incident is unclear, we were unable to determine whether the act's protection would cover the costs of an evacuation prompted by a radiation release that appeared imminent but did not occur.

As now written, the act defines a nuclear incident as an occurrence causing damages as a result of the radioactive properties of nuclear materials. It is not clear, however, whether the definition is broad enough to cover liability resulting from an occurrence where a precautionary evacuation is ordered but no release actually occurs. Such a situation is not specifically addressed by the act or its legislative history. This uncertainty applies equally to commercial licensees and Government contractors. However, according to NRC officials, commercial licensees carry protection through private insurance for such evacuation costs. DOE contractors, on the other hand, are not required to carry private insurance, and thus it is uncertain whether any evacuation costs would be covered. In fact, we believe that such costs for DOE contractor facilities may not be included under the protection afforded by the act. In our opinion, the language in the act should be clarified to permit public compensation for precautionary evacuations.

Madam Chairman, this concludes my prepared statement. We would be pleased to respond to any questions the subcommittee may have.

Mrs. BOUQUARD. Thank you very much, Mr. Peach.

On page 4 of your report you state that the public is provided greater financial protection with the act than without it. Could you elaborate on this statement?

The reasons for having greater financial protection with the act than without the act.

Mr. PEACH. OK. First, public compensation in this particular case would be subject to the availability of appropriated funds.

Now, we had some testimony earlier about how rapidly protection would be provided with the appropriated funds. In this regard, our report discusses an incident that occurred in the past where there had been a serious accident—not a nuclear accident—but a serious accident involving the Federal Government in a way where there was a question about public compensation for the incident and where compensation was not already provided through any congressional mechanism and that the Congress was ultonately required to consider. In such an instance you are looking at a range of 8 years plus for consideration to be given as to whether any moneys would be available to take care of any liability resulting from that particular incident.

Second, protection from the actions of subcontractors and others would not necessarily be covered by the act. That comes under the umbrella coverage that you get under the Price-Anderson Act. So it assures a broader range of coverage extending clearly down to the subcontractors.

Third, we covered the question of gross negligence or willful misconduct on the part of a subcontractor. In those instances, if you had that kind of thing, it could void Government self-insurance coverage but it would not void coverage under the Price-Anderson Act.

Finally, you have the question of a victim of a nuclear accident not having to establish fault on the part of the contractor. The Price-Anderson Act would provide protection regardless of why the accident occurred, however, conventional self-insurance would not.

Mrs. BOUQUARD. Thank you. I appreciate that clarification.

I would like your comments on precautionary evacuations also. Is there really a more compelling reason to have an immediate fund available through Price-Anderson for precautionary evacuations at nuclear facilities rather than for all Federal facilities that may lead to precautionary evacuations? In other words, wouldn't it be an appropriate distinction to limit Price-Anderson coverage to damages uniquely resulting from radioactive releases and allow the Federal Tort Claims Act to provide remedies for other types of damages that would equally result from nonnuclear related activities?

Mr. PEACH. Madam Chairman, I have to offer a qualified answer in that area. To the extent that we did not examine into, from a comparative basis, all the other circumstances that can occur where you might want to consider Federal liability, certainly in looking at precautionary evacuation under the Price-Anderson Act, we believe there is a serious question as to whether such evacuations are covered under the existing language of the act. Further, we believe it is probably something that should be remedied.

Mrs. BOUQUARD. What is the basis of your conclusion on page 9 of the report that "some DOE reactor operations could experience serious accidents comparable to those postulated for commercial nuclear reactors" considering the fact that these facilities are relatively isolated?

Mr. PEACH. We are basing that largely on the discussions we had with DOE officials and contractor operators of DOE nuclear facilities and the statements that we obtained from them that incidents of a similar nature could occur at both commercial nuclear power plants and at DOE operations. I think you have to remember that in some cases you are looking at rather large sized research reactors, production reactors for handling special nuclear materials and fuel fabrication facilities. So, I think similar kind of potential does exist and this is the position we got from talking with both the DOE contractor personnel and with DOE headquarters people involved in this area.

Mrs. **Bouquard**. Turning to punitive damages, could punitive damages be assessed against a contractor after a nuclear accident and, if so, would these damges be covered under the Price-Anderson Act?

Mr. **Peach**. As we read it now, yes, punitive damages would be covered under the Price-Anderson Act. The term that we see in the act is that public liability is defined as any legal liability arising or resulting from a nuclear incident. And so, while the act does not specifically address the question of punitive damages, we believe that would probably imply that the liability for punitive damages would be covered.

Mrs. **Bouquard**. Do you think the act should be changed to preclude the recovery of punitive damages, since this could be rather expensive? Does it really diminish the recovery?

Mr. **Peach**. Well, certainly, in punitive damages, as I understand it, and I am not a lawyer, you're dealing with damages that are added to the actual damages that occur in the form of a punishment for injuries that are caused to the parties so that whenever they made a claim, they not only receive actual damages but, in addition, punitive damages. Certainly, if you are dealing in a limited liability kind of a circumstance, the awarding of punitive damages could have the effect of reducing the total amount that is available to all the people that may be making claims.

So, I think that is a policy judgment that the Congress would have to look at as to whether they would wish to include punitive damages in the context that someone could be recompensed for under Price-Anderson.

Mrs. **Bouquard**. One final question, Mr. Peach. On page 4 of your report you state that the DOE contractors to whom you spoke "still view the limited liability as essential." How many of the 75 prime contractors did you speak with? Were they of the same opinion?

Mr. **Peach**. We spoke with 5 of the 75 prime contractors and that was basically the opinion that we obtained from all of them. However, in our report, we used some qualifying language. We indicated there is somewhat of a self-serving aspect for them indicating they need that kind of coverage in order to continue working for DOE on their nuclear facilities. But, we think also there is some element of truth involved, given the risk and potential damages involved in this particular area.

Certainly we think there would be a risk involved in removing the act's coverage and then seeing whether or not there would be contractors willing to operate the facilities without the act's coverage.

Mrs. **Bouquard**. Well, if the prime contractors are willing to accept the risks, does this mean that DOE could accomplish its role without serious difficulties?

Mr. **Peach**. If they were willing to accept the particular risk?

Mrs. **Bouquard**. But what about the subcontractors?

Mr. **Peach**. I don't know. I think there would still be serious questions in that area.

**Mrs. Bouquard.** Mr. Weber.

**Mr. Weber.** Thank you.

Mr. Peach, on page 3 of your testimony you state that "without the Price-Anderson Act victims of nuclear accidents would have to sue for damges, a process that could take several years." Am I correct in understanding, though, that with the Price-Anderson Act they not only don't have to sue, they can't sue? Is that correct?

**Mr. Peach.** Let me check and see.

**Mr. Weber.** Somebody from the last panel said it precluded the right to sue for damages.

**Mr. Peach.** Let me ask our General Counsel's office to reply for us.

**Mr. Armstrong.** The act doesn't establish a cause of action; the act just puts a limit on liability. The claimant would still have to go to court to prove liability on the part of the DOE contractor.

**Mr. Weber.** My point is, is the claimant not able to sue beyond the liability of Price-Anderson? In other words, if there were a substantial distaster far in excess of the half billion dollars called for in the act, there is no legal recourse for the damaged party.

**Mr. Armstrong.** That's correct. Other than the provision that Congress would review the incident and take such action as it deemed necessary.

**Mr. Weber.** I would just point out, and I don't ascribe to you any malicious intent, but the wording of that particular statement is a little bit questionable. While you are pointing out the Price-Anderson Act provides to potential victims of a disaster great protection, you fail to point out that it also withdraws from them any recourse under certain circumstances, and it seems to me that that is as likely an occurrence in the event, unlikely as it may be, of a substantial disaster.

**Mr. Peach.** I think that's a fair commentary. And the thing that was going through my mind in asking counsel to reply to that question is also the exact process and how it would work, given the additional provision to come before the Congress to seek additional moneys, if needed, because the potential damages go above the $500 million level provided by the act.

**Mr. Weber.** Let me just clarify. The punitive damages you talked about a minute ago are also limited; the limits on the liability includes punitive damages.

**Mr. Peach.** That's correct. If there were punitive damages that were assessed or claimed within that context, there would also be a limit there.

**Mr. Weber.** One last question, the same one that I asked others. Have you tried or are you aware of anything better than a guess as to what the potential damage could be in the case of a nuclear accident?

**Mr. Peach.** Well, I was hoping you were going to ask me that question.

I won't say that I'm aware of the specific damages but there have been studies that have been done in the past. Just to give you some benchmark kinds of figures, and this would refer back to a report that we prepared at Chairman Dingell's request when he was chairman of the Subcommittee on Energy and Power back in 1980.

In 1957, about the time you were considering the act, a catastrophic nuclear accident was put in the area of potentially $7 billion in property damages, 3,400 deaths and 43,000 injuries.

Now there was subsequently a 1975 reactor safety study that was done by NRC that talked in terms of a $17 billion outer figure for a property damages After the Three Mile Island accident, there was a Federal Insurance Administration analysis which put a range on potential damage that could have occurred at somewhere between $2.8 and $16.8 billion.

Now, those are wide benchmark figures. In our report, what we suggested was the Congress does have the difficult question, if they want to reconsider the $500 million level included in the Price-Anderson Act, of deciding how to set the level and what to do about that.

Mr. **Weber**. If I can interject at that point. If that type of an accident were to occur this year, as I understand it then, the Congress would be asked to appropriate funds in the range of $2.3 billion to $16.3 billion; correct?

Mr. **Peach**. Well, that's a very likely possibility. In other words, they would have to consider what they would want to do in that particular case. Now, if you question how quickly you would act on that kind of appropriation and what the problems would be, that would be difficult.

What we have suggested really is that both NRC and DOE do have a role in this area. They have the greatest amount of expertise, and using probabilistic analysis techniques or other things available to them, that they should examine and try to put some parameters on what reasonably could occur and on the types of accidents so that the Congress could have the best information available with respect to making that kind of judgment.

We realize that it is not easy and that there are going to have to be assumptions made and individual legislators and committees will have to look at those assumptions and see how comfortable they feel with them. They will have to understand the sensitivity anslysis involved in changing those assumptions and what that would mean with the kind of figures you come up with and then make a judgment with respect to what you want to do in that area. But we think it is the kind of information that you do need.

Mr. **Weber**. Thank you.

Mrs. **Bouquard**. Thank you, Mr. Weber.

Again, Mr. Peach, thank you and your associates for being with us today. I appreciate your testimony and the report that you prepared for us.

Mr. **Peach**. Thank you.

Mrs. **Bouquard**. Our next witness is Mr. Sam Iacobellis who is here on behalf of Rockwell International Corp., a DOE contractor.

Sam, we welcome you to our hearing today. We have your prepared statement. You may proceed as you wish or summarize and your statement will be made a part of the record.

## STATEMENT OF SAM IACOBELLIS, PRESIDENT, ENERGY SYSTEMS GROUP, ROCKWELL INTERNATIONAL

Mr. **Iacobellis**. Thank you.

I will try to abbreviate my statement. But I would appreciate the total being recorded.

Mrs. **Bouquard**. Please proceed.

Mr. **Iacobellis**. Madam Chairman and members of the committee, I am Sam Iacobellis, president of the Energy Systems Group of Rockwell International.

We are engaged in development work in several areas of energy potential including the breeder reactor, nuclear fusion, fossil fuels and solar and geothermal power generation.

We are a contractor for the Department of Energy as manager and operator of its Energy Technology Engineering Center in California; the Rocky Flats plant in Colorado; and we are responsible for the chemical processing, waste management, and site support services at the Hanford operations in Washington.

In addition, we are a supplier of equipment and services to the nuclear industry and to DOE as a prime contractor and also as a subcontractor.

I appreciate the subcommittee's invitation to take part in its evaluation of the application of the Price-Anderson Act to DOE contractor activities.

In our judgment, the act has been an essential element in the ability of the Government to obtain the services of private contractors to perform contracts at the Government's nuclear-related facilities. If the Government is to continue the operation by contractors of such nuclear-related facilities, as we believe it will and should, then we believe that Price-Anderson indemnification will continue to be an essential requirement. Further, without Price-Anderson coverage there can be no adequate assurance to the Government that there will be protection for the public in the event of a nuclear accident.

Now this is not to suggest that there is a high degree of risk of a nuclear accident in the operation of Government facilities. To the contrary, we believe that the probability of such an accident is extremely remote. However, no matter how much our knowledge and sophistication in the handling of nuclear technology has advanced, there is the possibility, though remote, of a nuclear accident.

To cover this possibility, private insurance is available only up to $160 million, and this amount may not be adequate. Liability in excess of such insurance protection would have to be satisfied from the assets of private contractors.

It is this possibility of a nuclear accident which could result in liabilities which exceed both the available insurance and the contractor's assets that will discourage companies from participating as contractors at Government nuclear-related facilities.

As an example, we have on many occasions had subcontractors on nuclear programs demand indemnity protection, and only upon assurance that their work was covered by the Price-Anderson indemnity in a prime contract were they willing to perform.

This also exemplifies one of the important advantages of the Price-Anderson Act; that is, when it is included in a contract, its coverage automatically applies to all parties engaged in the performance of the contract, whether as prime contractor or subcontractor, and this in turn has encouraged industry to provide the equipment and services required by the Government in its nuclear programs.

When evaluating Price-Anderson, I also think it is significant to note that this act has been cost-effective. By this, I mean that without the availability of Price-Anderson protection, private industry contractors performing nuclear work would obtain insurance coverage and would properly include the premium costs in the cost of equipment and services charged to the Government. With the availability of Price-Anderson indemnification, the DOE has directed its operating contractors not to carry such insurance.

Considering that there has never been a major claim under Price-Anderson, and consequently no significant payout of Government funds under that protection, the availability of Price-Anderson has obviated the need to reimburse unnecessary insurance premiums.

Now there are two matters I would like to address today. The first is the increase in the monetary indemnity limitations of the act. The amount of protection afforded to the public under Price-Anderson for normal contractor operations is a maximum of $500 million. This amount was established by the act upon its original passage and has not been modified since.

It certainly seems appropriate to me, considering the vast changes in economic and social conditions in the past 24 years, that this amount should be increased.

While we do not believe that the amount of coverage will affect industry decision to participate in contracts with Government nuclear-related facilities, we do believe that the publc should have the benefit of an increased monetary limit.

Now the second matter which I particularly wish to ask you to consider is a change in the present provision of the law that permits indemnification only where the DOE determines that there is a risk of a substantial nuclear incident.

The result of that requirement is that DOE must make a judgment, without the benefit of legislative standards or guidelines, each time a contract is awarded as to whether there is a risk of "a substantial nuclear incident." This places DOE in a very difficult position. On the one hand, it can point to the relatively accident-free history of nuclear power and declare its confidence in industry's ability to perform contracts without substantial risk to the public. On the other, since the possibility of an accident can never be eliminated, it should not leave the public without protection against that possibility, even though remote.

The logical course is for DOE to declare all contracts as involving the risk of a substantial nuclear incident. But this carries with it the implication that all nuclear-related activities are ultra-hazardous, when such is not the case.

As a consequence, there is a compelling influence to deny Price-Anderson coverage and the denial of that coverage operates to the potential detriment of the public at large, since if an incident does occur, the protection of the public intended by the act will not be available.

This problem would be eliminated if the word "substantial" was removed from the act and Price-Anderson protection was provided for all DOE contractors involved in nuclear activities.

Madam Chairman, you have asked me to address the question of whether it would be appropriate for the Government to require DOE contractors to take out insurance to supplement the Price-Anderson coverage. It is my judgment that it would be far more appropriate to increase the limits of Price-Anderson. As you will recall, insurance premiums are fully chargeable as a cost to the Government contract, and considering the accident history of the past 24 years, it appears to us that the most cost-effective means of providing additional coverage is to increase the Price-Anderson limits.

Now, summing up, I believe it is doubtful that established, responsible contractors would be willing to perform nuclear work for the DOE without Price-Anderson protection; I do not believe the public would have adequate financial protection in the event of a major nuclear accident without the coverage provided by the act; I further believe it would be appropriate to consider changes in Price-Anderson monetary indemnity limitations in view of changed economic conditions over the past 24 years; and finally, I do strongly believe that both the Government and the public would benefit by the elimination of the word "substantial" in the qualifying phrase limiting the extension of Price-Anderson protection to DOE contractors.

Thank you, Madam Chairman. That completes my prepared testimony, and I would be pleased to respond to any questions you may have.

[The prepared statement of Mr. Iacobellis follows:]

### STATEMENT OF SAM F. IACOBELLIS, PRESIDENT, ENERGY SYSTEMS GROUP ON BEHALF OF ROCKWELL INTERNATIONAL CORP.

Honorable Chairman and members of the committee, I am Sam Iacobellis, president of the Energy Systems Group of Rockwell International.

We are engaged in development work in several areas of energy potential including the breeder reactor, nuclear fusion, fossil fuels, and solar and geothermal power generation. We are a contractor for the Department of Energy as manager and operator of its Energy Technology Engineering Center in California; the Rocky Flats plant in Colorado; and we are responsible for the chemical processing, waste management, and site support services at the Hanford operation in Washington. In addition, we are a supplier of equipment and services to the nuclear industry and to DOE as a prime contractor and also as a subcontractor.

It is my understanding that this is the first time that the attention of a Congressional panel has been directed primarily to the application of the Price-Anderson Act to contractor activities in connection with Department of Energy Nuclear Research and Development Programs.

I appreciate the subcommittee's invitation to take part in its evaluation of the application of the Price-Anderson Act to DOE contractor activites.

I would like to review quickly some of the circumstances which led to the adoption of the Price-Anderson Act in 1957, since I believe they are pertinent to an evaluation of the impact of the act on nuclear research and development, and more particularly upon the activities of DOE contractors and subcontractors in the conduct of such activities.

Prior to 1957, the Atomic Energy Commission had provided a form of indemnity to its contactors that was more limited in scope than that which is currently provided for under the Price-Anderson Act, primarily in that it was made subject to the availability of appropriations. Further, due to a lack of direct contractual relationship, the indemnity did not cover the many subcontractors and suppliers engaged in such activities.

This meant that there was no assurance of financial protection for the public in the event, however remote, of a nuclear accident that might result from the activities of such subcontractors and suppliers.

The Price-Anderson Act was the response by Congress to a clear need for assured financial protection of the public in the event of a nuclear incident caused either by a prime contractor or its subcontractors or suppliers, and also provided financial protection for the contractors, subcontractors, and suppliers themselves.

In our judgment, the act has been an essential element in the ability of the Government to obtain the services of private contractors to perform contracts at the Government's nuclear-related facilities. If the Government is to continue the operation by contractors of such nuclear-related facilities, as we believe it should and will, then we believe that Price-Anderson indemnification will continue to be an essential requirement. Further, without Price-Anderson coverage there can be no adequate assurance to the Government that there will be protection for the public in the event of a nuclear accident.

This is not to suggest that there is a high degree of risk of a nuclear accident in the operation of Government facilities. To the contrary, we believe that the probability of such an accident is extremely remote. However, no matter how much our knowledge and sophistication in the handling of nuclear technology have advanced, there is the possibility, though remote, of a nuclear accident. To cover this possibility, private insurance is available only up to $160 million and this amount may not be adequate. Liability in excess of such insurance protection would have to be satisfied from the assets of private contractors. It is this possibility of a nuclear accident which could result in liabilities which exceed both the available insurance and the contractor's assets that will discourage companies from participating as contractors at Government nuclear-related facilities. As an example, we have on many occasions had subcontractors on nuclear programs demand indemnity protection, and only upon assurance that their work was covered by the Price-Anderson indemnity in a prime contract, were they willing to perform. This also exemplifies one of the important advantages of the Price-Anderson Act; that is, when it is included in a contract its coverage automatically applies to all parties engaged in the performance of that contract, whether as prime contractor or subcontractor and this in turn has encouraged industry to provide the equipment and services required by the Government in its nuclear programs.

When evaluating Price-Anderson, I also think it is significant to note that this act has been effective. By this I mean that without the availability of Price-Anderson protection, private industry contractors performing nuclear work would obtain insurance coverage and would properly include the premium costs in the cost of equipment and services charged to the Government. With the availability of Price-Anderson indemnification, the DOE has directed its operating contractors not to carry such insurance. Considering that there has never been a major claim under Price-Anderson and consequently, no significant payout of Government funds under that protection, the availability of Price-Anderson has obviated the need to reimburse unnecessary insurance premiums.

There are two matters I would like to address today: The first, is an increase in the monetary indemnity limitations of the act. The amount of protection afforded to the public under Price-Anderson for normal contractor operations is a maximum of $500 million. This amount was established by the act upon its original passage and has not been modified since. It certainly seems appropriate, considering the vast changes in economic and social conditions in the 24 years, that this amount be increased. While we do not believe that the amount of coverage will affect industry decision to participate in contracts with Government nuclear-related facilities, we do believe that the public should have the benefit of an increased monetary limit. The second matter I wish to ask you to consider is a change in the present provision of the law that permits indemnification only where the DOE determines that there is a risk of "a substantial nuclear incident." The result of that requirement is that DOE must make a judgment, without the benefit of legislative standards or guidelines, each time a contract is awarded as to whether there is a risk of "a substantial nuclear incident." This places DOE in a very difficult position. On the one hand, it can point to the relatively accident-free history of nuclear power and declare its confidence in industry's ability to perform contracts without substantial risk to the public. On the other, since the possibility of an accident can never be eliminated, it should not leave the public without protection against that possibility, even though remote. The logical course is for DOE to declare all contracts as involving the risk of "a substantial nuclear incident," but this carries with it the implication that all nuclear-related activities are ultra-hazardous. When such is not the case. As a consequence, there is a compelling influence to deny Price-Anderson coverage and the denial of that coverage operates to the potential detriment of the public at large, since if an incident does occur, the protection of the public intended by the act will not be available. This problem would be eliminated if the word "substantial" was removed from the act and Price-Anderson protection was provided for all DOE contractors involved in nuclear activities.

Your chairman has asked me to address the question of whether it would be appropriate for the Government to require DOE contractors to take out insurance to supplement Price-Anderson coverage. In my judgment, it would be far more appropriate to increase the limits of Price-Anderson. As you will recall, insurance premiums are fully chargeable as a cost to the Government contract and considering that there has been no major nuclear accident in the United States, it appears to us that the most cost-effective means of providing the additional coverage is to increase the Price-Anderson limits.

Summing up, I believe it is doubtful that established responsible contractors would be willing to perform nuclear work for the DOE without Price-Anderson protection; I do not believe the public would have adequate financial protection in the event of a major nuclear accident without the coverage provided by the act; I believe it would be appropriate to consider changes in Price-Anderson monetary indemnity limitations in view of changed economic conditions over the last 24 years, and I believe that both the Government and the public would benefit by the elimination of the word substantial in the qualifying phrase limiting the extension of Price-Anderson protection to DOE contractors.

Thank you.

Mrs. **Bouquard**. Thank you very much for your testimony.

Sam, if you recall earlier, I asked our DOE witnesses to comment on your statement that they must make a judgment as to the risk of substantial nuclear incident, that you felt it placed them in a very difficult position. He stated it was no problem. Would you care to comment on his answer?

Mr. **Iacobellis**. Yes. I wish Mr. Davis was here. I believe it is middle management out in the field where quite often this judgment concerning a "substantial" incident must be made. Quite frankly, I have seen certain instances where this has been denied for various reasons. Additionally sometimes there is the specter that perhaps this classification would unduly alarm the public, that this work really isn't hazardous, therefore let's don't put the Price-Anderson on the project. On the other hand, you know the possibility is remote that something could happen, and I think it would increase productivity for a host of lawyers to not have to address that question of "substantial" on each incident. I think it is a mischievous word and everybody would be better served if the coverage just applied for any nuclear activity.

Mrs. **Bouquard**. On page 4 of your testimony you stated "we do believe that the public should have the benefit of an increased monetary limit." Would you like to give us a number to increase the $500 million liability limit to?

Mr. **Iacobellis**. Well, sitting here all afternoon listening to the other gentlemen dodge that question, I feel this way. I think Ken Davis did have some good logic to what he stated, that the history has shown there has not been any major incident and therefore, even though inflation has taken place, perhaps the $500 million is still adequate. On the other hand, I've heard testimony and questions from the committee that it ought to be increased. I would recommend a simple scaleup in coverage, recognizing that inflation has taken place. With use of a cost index, take $500 million and extrapolate the coverage up to the present time. If the liability limit has been good for 24 years, let's increase it so that at least the effect of inflation is taken into account.

Mrs. **Bouquard**. Factor it for inflation.

Mr. **Iacobellis**. Yes.

Mrs. **Bouquard**. Thank you.

One final question. You stated that the Price-Anderson Act has been cost-effective. Well, if we were to repeal the Price-Anderson

Act, regardless of the chilling effect it had on a number of subcontractors or contractors who would be willing to do the work, what would you foresee as industry's response, if there would be any?

Mr. **Iacobellis**. Well, first, I believe the public's interest would be seriously impaired. I believe the results would be a decreased participation by highly qualified, established, responsible contractors. I say that because without Price-Anderson you would be serving the public with the limits of that contractor's assets. On the other hand, in my opinion, the established contractors, the larger ones, would be reluctant to perform.

Now in my case, personally I believe the risks are so remote that I would not worry about it. On the other hand, our board of directors, who come from various parts of industry and public life, representing those pensioners and shareholders that were mentioned earlier by Mr. Weber, I believe they would not want to take the risk on their company's part.

The bottom line is that I think there would be unwillingness on the part of qualified contractors and subcontractors to supply equipment and services. The result would be difficulty in meeting costs and operating schedules at many of these plants which are defense oriented in activity. I would assume that only the less experienced, smaller companies would take that risk and take on the job, perhaps in a joint venture put together overnight with no assets at all. That's what I would perceive as the end result, if Price-Anderson coverage was withdrawn.

Mrs. **Bouquard**. Thank you.

Mr. Ventre has a question.

Mr. **Ventre**. Mr. Iacobellis, in your testimony you noted the possibility of DOE not extending Price-Anderson Act coverage. You mentioned that the public should not be without protection against the possibility of an accident, even though remote. If Price-Anderson Act coverage isn't extended to a contractor, wouldn't the public be protected in terms of its ability to recover damages through the Federal Tort Claims Act against the Government? There is no upper limit on the damage?

Mr. **Iacobellis**. I believe that that would be only to the limits of the assets of that company.

Mr. **Ventre**. All right. Suppose that the individual sued the contractor as well as the Government, and the Government, as you know, might be liable under the Federal Tort Claims Act, depending upon a number of hurdles in that act, including a discretionary function action. But suppose that, for example, the corporation was a dummy corporation with no assets. Wouldn't the public be protected through the Federal Tort Claims Act against the Government?

Mr. **Iacobellis**. Well, my field is not legal. My judgment, from what I do know, is that the act, as it now stands, does have the public sector in mind when you don't have to prove who is at fault. It eliminates this process of legal hassle, and I think that is the attractive feature of the act. From the flavor of the question, it bothers me that perhaps we would think of something other than Price-Anderson to refer to when this does protect all people. In fact, some subcontractors may not even know they are involved in a nuclear activity, if they were to sell a part that goes on this assembly and that assembly, and before you know it that part might have been the item that gives a problem.

Mr. **Ventre**. Thank you very much.

Mrs. **Bouquard**. Sam, thank you for being with us. We appreciate your patience and your very fine testimony, and we thank you for being a good friend to the subcommittee.

The subcommittee will now stand adjourned.

[Whereupon at 4:15 p.m. the hearing was adjourned.]

APPENDIX

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REPORT BY THE
# Comptroller General
OF THE UNITED STATES

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# Congress Should Increase Financial Protection To The Public From Accidents At DOE Nuclear Operations

In the event of a nuclear accident at a Department of Energy (DOE) facility, liability protection for public injury would be covered by the Price-Anderson Act. The act establishes the sources and amount of funds to cover public injury and provides a basis for relatively speedy compensation. The act also limits the amount of funds that are readily available for compensation.

GAO believes that since it is the Nation's policy to foster the continued development of nuclear power, the protection provided DOE contractors by the Price-Anderson Act is needed, especially since alternative methods for insuring the public against the potential hazards of a catastrophic nuclear accident do not provide as much financial protection as does the Price-Anderson Act.

In GAO's opinion, public protection under the Price-Anderson Act should be increased for DOE contractor operations. Certain provisions in the Price-Anderson Act and its implementation (1) serve to provide less public financial protection from accidents occurring at DOE contractor-operated facilities than at licensed commercial facilities and (2) may not adequately protect the public from the financial consequences of a catastrophic nuclear accident. Finally, the act does not clearly establish whether evacuation costs in all cases would be covered. GAO recommends that the Congress correct these problems.

EMD-81-111
SEPTEMBER 14, 1981

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON D.C. 20548

B-197742

The Honorable Marilyn L. Bouquard
Chairman, Subcommittee on Energy
  Research and Production
Committee on Science and Technology
House of Representatives

Dear Madam Chairman:

In response to your request dated May 21, 1981, we examined the Price-Anderson Act as it governs nuclear accident liability of Department of Energy (DOE) contractors. Specifically, you requested that we (1) determine the number of DOE contractors protected by the Price-Anderson Act and (2) render an opinion on the necessity for continuing such protection.

The Price-Anderson Act provides protection to both DOE contractors and the public to cover liability resulting from a nuclear accident. Although 75 DOE prime contractors are specifically protected by the Price-Anderson Act, this protection is also extended to the many thousands of subcontractors working at DOE facilities as well as anyone else causing a nuclear accident to occur. Appendix II contains a list of the DOE prime contractors covered by the act.

Regarding your second question, we believe the protection provided by the Price-Anderson Act should be continued. We arrived at this conclusion after carefully considering the current U.S. position to develop nuclear power and the availability of other forms of insurance for nuclear activities. However, we believe certain provisions in the act should be changed and/or clarified to provide better public protection from catastrophic nuclear accidents. For example, implementing the act's provisions serves to provide more financial protection for accidents resulting from a commercial activity than those resulting from a Government operation. Further, the current limit on liability may not provide sufficient public financial protection to adequately compensate victims of catastrophic nuclear accidents. Moreover, in our judgment, the act's definition of a nuclear incident is unclear. As a result, liability arising from some nuclear accidents may not be covered. The details of our evaluation are discussed in appendix I of this report.

In order to answer the two questions you posed, we

--researched the act's legislative history and evaluated its major provisions as they pertain to DOE contractors;

--reviewed DOE's methods for determining contractor eligibility and coverage under the act; and

--interviewed officials of DOE and five major DOE contractors as well as officials of the Nuclear Regulatory Commission (NRC), the Federal Emergency Management Agency, nuclear transporters, public interest groups, and the nuclear insurance industry to obtain a broad spectrum of views and concerns pertaining to the act and to identify any problems areas or gaps in the act.

Since our review was limited to examining the Price-Anderson Act as it applies to DOE contractors, we did not examine the act's coverage of licensed commercial facilities. In a recently completed study of commercial coverage under the Price-Anderson Act, we found that the act's coverage may not be adequate and should be redefined. In our earlier report issued on August 18, 1980, entitled, "Analysis of the Price-Anderson Act" (EMD-80-80), we recommended that NRC assess the various accidents that could occur at a commercial nuclear facility and redefine for the Congress the act's limit on liability.

Also, we did not examine the current status of the major social, economic, and institutional issues surrounding the need for nuclear power that have been the subject of debate in recent years. Rather, our approach was to do a broad review of the act and its major provisions in light of the Nation's existing policy to foster the continued development of nuclear energy and nuclear weapons.

NRC and DOE commented on our report, and both agencies generally agreed with the report's contents, with one exception. NRC disagreed with the recommendation that would require that it assess the financial consequences of nuclear accidents that could occur at commercial nuclear facilities. Our evaluation of NRC's comments is on page 14 of appendix I, and the complete text of its comments is included as appendix IV.

Your office requested that we make no further distribution of the report prior to committee hearings, at which time the report will be released. Following the hearings, we will send copies to DOE, NRC, and other interested parties. We will make other copies available upon request.

Sincerely yours,

Milton J. Socolar

Acting Comptroller General
of the United States

## Contents

Page

APPENDIX

I EVALUATION OF THE PRICE-ANDERSON ACT AS IT APPLIES TO DEPARTMENT OF ENERGY CONTRACTORS 1
  Background and history of the Price-Anderson Act 1
  Many DOE contractors are covered by the Price-Anderson Act 2
  The Price-Anderson Act should be retained 3
  The Price-Anderson Act should be clarified to provide more consistent protection for DOE-contractor operations 6
    Public financial protection for commercial activities is greater than for contractor operations 6
    Public financial protection may not be sufficient to cover many accidents that could occur 8
    The definition of a nuclear incident is unclear 10
  Conclusions 11
  Recommendations to the Congress 12
  Agency comments and our evaluation 13

II Department of Energy prime contractors covered by the Price-Anderson Act 15

III Recommended legislative language for providing financial protection from accidents at DOE-contractor operations equal to that for licensed commercial activities 17

IV Letter dated August 14, 1981, from the Executive Director for Operations, Nuclear Regulatory Commission 18

V Letter dated May 21, 1981, from the Honorable Marilyn L. Bouquard, Chairman, Subcommittee on Energy Research and Production, Committee on Science and Technology, House of Representatives 22

## ABBREVIATIONS

| | |
|---|---|
| DOE | Department of Energy |
| NRC | Nuclear Regulatory Commission |

BEST COPY AVAILABLE

# EVALUATION OF THE PRICE-ANDERSON ACT AS IT APPLIES TO DEPARTMENT OF ENERGY CONTRACTORS

## BACKGROUND AND HISTORY OF THE PRICE-ANDERSON ACT

The Atomic Energy Act of 1954 produced a major change in national policy toward nuclear development by authorizing private industry to engage in a variety of nuclear activities. This redirection in policy brought with it a new problem--the reluctance of private industry to participate in nuclear power development without adequate liability insurance. Although a serious nuclear accident was considered to be highly unlikely, the effect of one could be extremely serious and economically disastrous to any one organization. At the time, private insurance in amounts sufficient to cover a nuclear accident--estimated to be many billions of dollars--was not available. Consequently, private companies viewed the possibility of a nuclear accident--while very remote--as a substantial roadblock to their participation in the development of nuclear technology. Similarly, private companies operating nuclear facilities for the Government were also concerned with the extraordinary financial risk associated with developing nuclear energy.

Exposing the industry to a potentially huge financial liability did not, at the same time, guarantee financial protection to the public. Victims of a nuclear accident would have to sue for damages, a process that could take several years. And, even if a judgment were awarded, actual compensation would depend on the solvency of the particular company involved.

The Price-Anderson Act of 1957 was designed to deal with these problems. The major objectives of the act are to

- --assure the availability of funds to the public to satisfy liability claims in case of a catastrophic nuclear accident and
- --remove the deterrent to private participation in the development and use of nuclear energy presented by the threat of enormous liability claims in case of an accident.

Initially, the act was to cover a 10-year period and provide two layers of liability coverage--private insurance and Government indemnity. During the 10-year period, it was hoped that enough experience would be gained so that the insurance industry would have a basis for developing a sound program of its own with no Federal subsidy to the nuclear industry. However, this did not occur. Since its enactment, the Price-Anderson Act has been amended several times and extended twice, and for commercial nuclear reactors, a third layer of liability coverage has been added. Current coverage is now available through 1987.

In the event of a catastrophic nuclear accident at a Department of Energy (DOE) facility, liability for injury to the public would be covered under the Price-Anderson Act. The act establishes the sources and amount of funds that will be available to cover public injury and provides a basis for relatively speedy compensation to victims of a nuclear accident. The act also imposes a legal limit on liability which provides a cap on the amount of funds that are readily available. As currently implemented by DOE, the limit on liability for DOE contractor operations is $500 million, which has remained unchanged since the act's inception.

## MANY DOE CONTRACTORS ARE COVERED BY THE PRICE-ANDERSON ACT

The Price-Anderson Act authorizes DOE to enter into indemnity agreements with its contractors, which frees the contractor of liability resulting from a nuclear accident. DOE may enter into these agreements for constructing or operating any nuclear production or utilization facility 1/ or any other activity that poses a risk to the public from a nuclear accident. The act also allows DOE to require contractors to maintain any type or amount of additional financial protection DOE considers appropriate to cover liability. DOE has broad discretion in deciding who will be indemnified and how much additional protection is required. In general, the DOE policy is to provide Price-Anderson liability protection to contractors operating production and utilization facilities or any other nuclear operation where $60 million or more in damages could occur. DOE, however, does not currently require its nuclear contractors to carry any additional financial protection, beyond the $500 million provided for in the act, since the cost of private insurance would generally be paid for by DOE as a reimbursable cost.

The Price-Anderson Act is probably unique in its application of what is commonly referred to as "umbrella coverage." In addition to covering the contractor with whom DOE has executed an indemnity agreement, the act also covers subcontractors, vendors, suppliers, architect-engineers, and transporters who are performing work in connection with that contractor's nuclear activity. The act even covers past work that could cause an

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1/A production facility produces nuclear material which is used for reactor fuel or in weapons, while a utilization facility uses nuclear material in its operations.

accident at some future date. Thus, the contractor who performed past work would be covered even though he no longer has an active contract. Under the umbrella coverage, a member of the general public, including a terrorist or saboteur, would even be covered. Accordingly, the public would be compensated, regardless of who causes an accident (1) at a nuclear facility covered under the Price-Anderson Act or (2) during the transportation of nuclear material to or from that facility. This coverage applies equally to commercial licensees and Government contractors.

At our request, DOE provided a listing of all active prime contracts containing specific Price-Anderson indemnity agreements and its best estimate of the number of active subcontracts protected under the umbrella coverage of the act. The listing, included as appendix II, shows that as of June 16, 1981, 75 active prime contracts contained Price-Anderson indemnity coverage, and an estimated 71,000 active subcontracts were covered under these indemnity agreements.

To place this in perspective, we also obtained the Nuclear Regulatory Commission's (NRC's) most recent data on the number of licensed commercial activities that would be covered by the Price-Anderson Act. As of September 30, 1980, 178 NRC-licensed activities were covered by the Price-Anderson Act as compared to the 75 under DOE's jurisdiction. It should be noted, however, that many DOE contractors are responsible for operating DOE-owned complexes where a number of different nuclear activities are carried out at one location by one contractor. For example, DOE's Savannah River Plant (South Carolina) is operated by Dupont and consists of about 20 major facilities which include facilities such as nuclear materials production reactors, a reprocessing facility, [1] and high-level nuclear waste storage facilities. Accordingly, DOE estimates that its nuclear operations are being carried out at approximately 280 different facilities.

## THE PRICE-ANDERSON ACT SHOULD BE RETAINED

Liability protection provided DOE contractors still appears to be necessary because many of the reasons for originally passing the Price-Anderson Act still exist today. For example, catastrophic nuclear accidents causing severe public consequences could still occur; sufficient private insurance to cover such consequences is still unavailable; and, based on our discussions with DOE and contractor officials and officials from private companies outside of the DOE nuclear complex, it appears that private industry is still unwilling to assume the risks of such accidents without adequate financial protection. Moreover, the public is provided greater protection with the act than without it.

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[1] A reprocessing facility chemically recovers the unused fissionable material from spent reactor fuel.

The most significant feature of the Price-Anderson Act--the limit on liability--has long been viewed as a necessary condition for private industry involvement in nuclear power development. The DOE contractors we talked to still view the limited liability as essential. Without such protection, contractors expressed an unwillingness to perform DOE nuclear activities. DOE officials also believe that contractors would be unwilling to assume the risk of loss from a nuclear accident without some type of protection for losses that could occur. DOE officials pointed out that more than half of DOE's nuclear contractors are performing defense-related work, without which our national security could be jeopardized. In addition, both DOE and contractor officials contend that without such protection it would be difficult, if not impossible in some cases, to find companies willing to perform essential subcontract activities.

In our view, it is difficult to determine whether these arguments are really valid. Although we believe DOE officials and contractor representatives responded to our questions candidly and to the best of their ability, it may be difficult for these officials to be completely objective. Should the act's protection be removed, contractors would no longer be totally protected from the financial risks of a nuclear accident, which many perceive to be a direct Federal subsidy. Consequently, whether eliminating Price-Anderson coverage for DOE contractors would indeed affect DOE's ability to attract qualified contractors to operate its nuclear facilities is uncertain and may never be known unless the act's protection is actually removed.

Nevertheless, in our view, there are other factors that argue in favor of retaining the act's coverage for DOE nuclear facilities. These are basically the same factors that led to passage of the act in the first place. Although the Price-Anderson Act limits the amount the public could collect for damages resulting from a nuclear accident, it does assure that some funds will be readily available when needed. Without the Price-Anderson Act, victims of nuclear accidents would have to sue for damages, a process that surely would take longer and could take several years. And, even then, the right to sue does not guarantee one's ability to collect. Without any protection--Government or private--a catastrophic nuclear accident could bankrupt a contractor, and thus, injured members of the public would have no assurance they could recover adequate compensation, if indeed they could get any compensation at all.

Moreover, if DOE contractors were to provide protection by purchasing private insurance to cover nuclear accidents, the potential hazards from catastrophic accidents would be far greater than the amount of insurance available. The maximum amount of insurance contractors could purchase from the nuclear insurance industry is $160 million--an amount substantially smaller than coverage available under the Price-Anderson Act. 1/

Even if DOE nuclear contractors were covered by the more conventional self-insurance policies of the Federal Government--as is now done for some DOE non-nuclear contractors--the public would receive less financial protection than that currently provided for catastrophic nuclear accidents by the Price-Anderson Act. Such shortcomings would generally include the following:

--Public compensation would be subject to the availability of appropriated funds. As a result, the amount of coverage would be uncertain. Under the Price-Anderson Act the public is assured of up to $500 million.

--Protection from the actions of subcontractors and suppliers would not automatically be provided through Government self-insurance. On the other hand, the Price Anderson Act's umbrella coverage provides this unique feature.

--Certain contractor actions, such as acts of willful misconduct or gross negligence, could void Government self-insurance coverage. Thus, victims of a nuclear accident would be left without any coverage under these circumstances.

--Victims of a nuclear accident would have to establish that the accident occurred because of some fault on the part of the contractor. The Price-Anderson Act provides protection regardless of why the accident occurred.

For these reasons, we believe that the financial protection provided DOE contractors and the public still appears to be desirable today and should be retained. In our earlier report, we concluded that removing the act's protection for commercial facilities without replacing it with comparable liability coverage would not be in the Nation's best interest. We believe the same applies to DOE contractor activities. However, in examining the act's provisions, we found certain inadequacies that need to be corrected to provide a more equitable scheme of protection for nuclear accidents. These are discussed below.

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1/DOE contractors must meet requirements established by the private insurance pool to be eligible for coverage. If these requirements are the same as those established for commercial licensees, policies may exclude coverage for accidents involving an assembled nuclear weapon.

## THE PRICE-ANDERSON ACT SHOULD BE CLARIFIED TO PROVIDE MORE CONSISTENT PROTECTION FOR DOE-CONTRACTOR OPERATIONS

In examining the major provisions of the Price-Anderson Act, we found certain inadequacies and inconsistencies that should be corrected. First, we found that the total amount of money available to the public to cover catastrophic accidents is greater for an accident occurring at a commercial nuclear facility than at a DOE contractor-operated facility. Second, as a result of the legal limit on liability, the public's potential loss continually increases as inflation erodes away their assured level of financial protection. Finally, because the definition of a nuclear incident is unclear, we were unable to determine whether the act's protection would cover the costs of an evacuation prompted by a radiation release which appeared imminent but never occurred.

### Public financial protection for commercial activities is greater than for contractor operations

Originally, the Price-Anderson Act provided two layers of liability protection for commercial nuclear activities--$60 million in private insurance and $500 million in Government indemnity. In 1957, when the act was passed, the first layer (private insurance) was set at $60 million because that was the maximum amount of insurance then available. The second layer (Government indemnity) was limited to $500 million because at the time, the Congress believed that that amount would not seriously disturb the estimated $65.9-billion Federal budget. Thus, the $500-million limit on liability was not based upon the offsite consequences of a particular nuclear accident but rather upon the willingness of nuclear insurance companies and the Federal Government to provide liability coverage.

In 1975, the Congress amended the Price-Anderson Act to include a third layer of coverage for commercial reactors. This layer, called a retrospective premium, is paid by each commercial reactor operator but not until after an accident occurs. The premium, now set at $5 million per reactor, 1/ is intended

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1/In a prior report entitled, "Analysis of the Price-Anderson Act," EMD-80-80, Aug. 18, 1980, we recommended that NRC reassess the amount currently being charged for the premium. We also recommended that the Commission define for the Congress a more realistic limit on liability. However, NRC believes that it is more appropriate that the Congress determine whether to increase either the retrospective premium or the limit, and thus plans no action.

to eventually phase out the Government indemnity layer of protection. For example, with the addition of the retrospective premium as well as the increased amount of private insurance coverage that has become available since 1957, Government indemnity has been reduced to only $35 million. Current coverage is now provided from the following sources:

| | Coverage<br>(million) |
|---|---|
| Private insurance | $160 |
| Retrospective premium<br>($5 million x 73 reactors) | 365 |
| Government indemnity | 35 |
| Total | $560 |

Claims would first be paid by private insurance and then by the retrospective premium. When funds from both private layers are exhausted, Government indemnity payments would then be made. Once 80 reactors are licensed to operate, now estimated to be around 1982, Government indemnity will be phased out.

In addition to phasing out Government indemnity, the retrospective premium also serves to allow the limit on liability to increase as more reactors are licensed to operate. For example, in 1987, when the Price-Anderson Act is due to expire, NRC projects that 134 reactors will be operating. With 134 reactors operating, the limit will increase to $830 million (134 reactors x $5 million = $670 million + $160 million of private insurance), and even this is assuming private insurance coverage stays at the $160-million level that is now available and the retrospective premium remains the same.

Liability resulting from DOE contractor activities, on the other hand, is limited to the $500 million in Government indemnity plus any additional financial protection DOE may require. The act gives DOE broad discretion to determine how much, if any, additional financial protection its contractors are to maintain. Since DOE contractors, for the most part, have cost-reimbursable contracts, the cost of insurance purchased by the contractor would be reimbursed by DOE. Thus, DOE has chosen not to require any private insurance coverage. In addition, the act does not require DOE to establish a retrospective premium for its contractors. As a result, the maximum liability for DOE contract activities is currently $60 million lower than for commercial nuclear reactors, and under current DOE practices will remain so unless (1) DOE requires contractors to purchase insurance or (2) the Congress raises the Government indemnity portion of the act. In addition, this gap will widen as more reactors are licensed to operate and the commercial limit rises. Thus, the public receives less financial protection from the consequences of catastrophic nuclear accidents resulting from a DOE-contractor operation than from a licensed commercial activity. In our opinion, it is difficult to justify two different levels of public financial protection from catastrophic nuclear accidents depending upon such an artificial distinction as whether a nuclear accident occurs at a licensed commercial activity or a Government-contractor operation.

## Public financial protection may not be sufficient to cover many accidents that could occur

In examining the act's limit on liability, we found that the public may not be adequately protected from the financial consequences of a catastrophic nuclear accident. While the act assures that $500 million will be available in the event of a nuclear accident, the public is not guaranteed that it will receive additional compensation should damages exceed the limit. Moreover, while the total amount of available funds has remained the same over the years, the potential costs of a catastrophic accident have risen due to inflation. As a result, the public receives less financial protection today than it did in 1957 when the act was initially passed. For such a scheme to be equitable, we believe the limit on liability should be increased. 1/

In our view, the Price-Anderson Act has succeeded in removing the financial deterrent to private sector participation in DOE nuclear activities since DOE contractors incur no financial responsibility for potential liability claims or, for that matter, any liability claim resulting from a nuclear accident. Liability claims resulting from a contractor's nuclear activity covered by the Price-Anderson Act would be paid for by the Government.

Public financial protection provided under the act, on the other hand, is limited. During our review, we attempted to determine whether the $500-million limit on liability would cover catastrophic accidents resulting from DOE contractor operations. However, when asked what the financial impact of the most serious nuclear accident would be, DOE field office officials did not know. Several headquarters officials, however, told us that such

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1/Our earlier report disclosed a similar situation for commercial reactors and, as noted earlier on p. 6, we recommended that NRC redefine for the Congress the limit on liability.

accidents could far exceed the $500 million limit on liability. In fact, some DOE reactor operations could experience serious accidents comparable to those projected for commercial nuclear reactors. Projected property damage from a major nuclear accident at a commercial reactor ranges from a low of $10 million to a high of $100 billion. Further, if personal injuries are included, damages could be substantially higher.

Although the limit on liability was not based on the consequences of any specific nuclear accident at the time the act was passed, the Congress believed that the amount would cover most accidents that could occur. Since that time, however, inflation has served to erode the $500-million level of protection. For example, $500 million in 1957 dollars is only worth about $183 million today. Or, to be equivalent to the 1957 coverage, the limit would have to be increased to about $1.4 billion. Even if the limit were based on the Federal budget, coverage would have to be increased to $5.3 billion to remain at the same level as it was in 1957. For example, in 1957, $500 million represented 0.76 percent of the estimated Federal budget. Taking 0.76 percent of the estimated Federal budget for 1982 would provide $5.3 billion in Government indemnity coverage.

By a 1975 amendment to the act, the Congress specified that should damages exceed the limit, it would thoroughly review the accident and take whatever action it considered necessary and appropriate to protect the public from the financial consequences of such a disaster. Most of the DOE and contractor officials we interviewed believed that because of this provision, public protection is not limited. They claim that should the limit be exceeded, the Congress will act to provide additional compensation. However, this provision only obligates the Congress to review the accident, and does not obligate the Congress to authorize or appropriate additional funds. A look into history provides a good example--in fact the only example--of what can happen when a Government contractor is involved in a major accident where no Federal remedy has been prescribed for handling liability claims.

The incident occurred in 1947 when two ships carrying ammonium nitrate under a Government contract exploded at a dock in Texas City, Texas, killing 590 people and injuring 3,500. The explosion virtually destroyed an entire dock and about 1,000 homes, industrial plants, and other buildings. Although approximately $100 million in liability claims resulted from this accident, actual damage estimates ranged from a low of $60 million to several billion dollars. It was not until 8 years after the accident that the Congress passed the Texas City Disaster Relief Act, allowing the Army to pay out $17.1 million in claims. Under a 1959 amendment, an additional $4 million in payments was permitted. The last payment was made in 1962--15 years after the disaster.

Although the Texas City accident did not involve nuclear material, it shows what can happen by waiting until after a disaster occurs to cope with its consequences. Should the consequences of a nuclear accident be within the $500-million limit, we believe the Price-Anderson Act would provide for a swifter means of compensating victims than was available to victims of the Texas City incident. However, should the consequences of a catastrophic accident significantly exceed the limit, then the Price-Anderson Act may provide only token coverage unless the Congress decides to provide additional relief. In our view, the total amount of protection the Government is willing to provide should be determined prior to an accident so that swift and just compensation can be made.

Since inflation has eroded the public's assured level of financial protection over the years, the Price-Anderson Act may no longer be sufficient to cover many contingencies that could occur. Thus, to determine the amount of public financial protection that should be provided, we believe the actual consequences of potential nuclear accidents at DOE facilities should be assessed. In our earlier report on the Price-Anderson Act, we recommended that NRC assess the accidents that could occur at commercial facilities to define a limit on liability for the Congress. Similarly, because of the unique nature of DOE's weapons-related and research activities, we believe such a study should also be performed for DOE facilities.

### The definition of a nuclear incident is unclear

Whether the Price-Anderson Act covers liability resulting from an accident causing damages to the public even though there is no radioactive release is unclear. The act defines a nuclear incident as an occurrence causing damages as a result of the radioactive properties of nuclear materials. It is not clear, however, whether this definition is broad enough to cover liability resulting from an occurrence where a radiation release appears imminent and a precautionary evacuation is ordered but no release actually occurs. Such a situation is not specifically addressed by the act or its legislative history. This uncertainty applies equally to commercial licensees and Government contractors.

According to NRC officials, however, commercial licensees carry protection through private insurance for such evacuation costs. Should an evacuation occur because there was "imminent danger" of a radioactive release, private insurance would pay for these costs. DOE contractors, on the other hand, are not required to maintain private insurance, and thus, it is uncertain whether any evacuation costs arising from a precautionary evacuation would be covered since neither the act nor its legislative history specifically addresses this situation. We believe that should a precautionary evacuation take place and later it is found there was no release, these costs may not be included under the protection provided by the Price-Anderson Act.

## CONCLUSIONS

Since the Federal Government is still committed to fostering private industry involvement in nuclear energy, and since alternative methods of insuring the public against the potential hazards of a catastrophic nuclear accident do not provide as much financial protection as does the Price-Anderson Act, we believe that the financial protection provided DOE-contractor operations is still needed.

Differences in the treatment of DOE-contractor operations under the Price-Anderson Act, however, serve to provide less financial protection to the public against losses from nuclear accidents from DOE-contractor operations than from licensed commercial activities. Because DOE contractors are covered by only one layer of financial protection, current coverage is $60 million lower than for commercial licensees. Thus, the public may not be equally compensated if damages exceed $500 million. Further, as more commercial reactors are licensed to operate and the limit on liability rises on the commercial side, this gap in coverage will widen. In our opinion, public financial protection should be consistently applied, regardless of who is performing the nuclear activity.

Consequently, we believe that at a minimum, the Congress should increase coverage for DOE contractors to provide protection that is comparable to that provided for commercial activities. This could be done by

--requiring DOE contractors to purchase private insurance,

--raising the legal limit on Government indemnity, or

--some combination of both.

If contractors are required to purchase private insurance, however, the cost of this insurance, under current DOE procurement practices, would be paid for by DOE.

Even if the Congress raises the limit for DOE-contractor operations so that coverage is equal to licensed commercial activities, compensation to victims of a nuclear accident may still be inadequate since the limit on liability is not based on an assessment of damages that could actually occur. Although the Congress believed that the limit was sufficient to cover most accidents that could occur at the time the act was passed, there is little assurance that this remains true today. In fact, just the opposite is true. Since costs have continued to rise over the years due to inflation and the limit on liability has remained the same, the level of assured public financial protection has decreased. As stated earlier for DOE facilities, $500 million in 1957 dollars is only worth about $183 million today. Similarly, in the case of commercial licensees, $560 million in 1957 dollars is only worth $205 million today.

We believe that the Congress should assure that the financial protection available to the public is equitable. Thus, we believe that the limit on liability should be reexamined and studies should be performed to assess the potential consequences of catastrophic nuclear accidents that could occur from both commercial and DOE-contractor activities. These studies would then serve as a basis for the Congress to determine to what extent, if any, the limit should be raised. In our earlier report, we recommended that NRC assess various accident scenarios to define for the Congress a limit on liability. However, NRC disagreed and said that it was more appropriate for the Congress to determine what the limit should be.

While we agree that the Congress must make the decision, we believe that it cannot determine what the limit on liability should be without sufficient information for making such a judgment. Consequently, in our opinion, NRC should still perform an assessment of the potential financial consequences that could occur at commercial nuclear facilities, and DOE should perform a similar study for its contractor operations. Once the potential financial consequences are assessed, the Congress could then determine whether to set a new limit or provide for periodic adjustments to the limit based on some predetermined index. Using this approach, the Congress could base its decision on the potential liability that could occur, the impact such an amount would have on the Federal budget, and any other factors it might deem relevant, such as those affecting national security.

Limited coverage of DOE contractors is further compounded by the uncertainty concerning what constitutes a nuclear incident. Under the act's current provisions, should a precautionary evacuation occur around a DOE facility and it is later found there was no radioactive release, it is uncertain whether the victims of the evacuation would receive the financial protection provided by the Price-Anderson Act. We believe the act should be amended to provide such protection. Further, commercial activities provide such protection through private insurance. Since DOE contractors do not carry private insurance, such an amendment would also assure that contractor activities are equally protected.

## RECOMMENDATIONS TO THE CONGRESS

As long as the Price-Anderson Act remains in effect, we believe that the Congress should assure that arbitrary distinctions are corrected and that the financial protection provided the public is consistent. Thus, we recommend that the Congress:

--Amend the Price-Anderson Act to increase protection for DOE-contractor activities to provide public protection equal to that for licensed commercial activities. This amendment should also include provisions to assure that as commercial coverage increases, contractor coverage also increases. (See app. III for recommended legislative language.)

--Amend the definition of "nuclear incident" contained in chapter 2, section 11 (q) of the Atomic Energy Act of 1954, Public Law 83-703, as amended, by adding the following at the end of the definition: "And provided further, that it shall include any occurrence where the Commission, or the Department of Energy in relation to its contractors, determines a release of radiation may be imminent."

Further, we believe that the Congress should reexamine the limit on liability to assure public financial protection is equitable. Thus, the legislative committees for DOE and NRC should require both agencies to perform such assessments and identify for the Congress the potential consequences that could occur. This would then serve as the basis for congressional review. We therefore recommend that the legislative committees for DOE and NRC require both agencies to perform studies assessing the financial consequences of catastrophic nuclear accidents that could occur from activities performed by both commercial licensees and Government contractors. Based on these studies, the Congress should reexamine the limit to determine whether a new limit needs to be set and/or whether the limit should be tied to an index to allow for periodic readjustment.

## AGENCY COMMENTS AND OUR EVALUATION

Both NRC and DOE generally agreed with our report. NRC, however, believes that its response to the Congress on our earlier report on the Price-Anderson Act provides sufficient information for the Congress to use as a basis to determine whether to increase the limit on liability for commercial activities. We recognize that the information provided by NRC would be useful to the Congress since it estimates that the property damage that could occur from an accident serious enough to require an evacuation ranges from a low of $10 million to a high of $100 billion. Further, if personal injuries are included, damages could be substantially higher. Although this information would be useful to the Congress, we believe it is incomplete.

We do not believe the data already provided by NRC gives the Congress a sufficient basis on which to determine a limit on liability that would cover most contingencies that could occur. As we see it, all that this information provides is an upper and lower extreme of the amount of property damage that could occur from a catastrophic nuclear accident at a commercial facility. What it does not provide, however, is information on where the greatest number of possible accidents would fall so that Congress can better understand and determine the limit on liability protection that should be established. Thus, we still see a need for NRC to further assess the potential consequences of catastrophic nuclear accidents to better define for the Congress the financial consequences that could result from most accidents at licensed commercial activities. We believe that this information should be provided the Congress, even if NRC must examine the potential consequences that could occur at all licensed commercial activities.

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APPENDIX II

## DEPARTMENT OF ENERGY PRIME CONTRACTORS
## COVERED BY THE PRICE-ANDERSON ACT (note a)

| Contractor | Number of contracts |
|---|---|
| Associated Universities, Inc. | 1 |
| Babcock & Wilcox Company | 3 |
| Battelle Memorial Institute | 1 |
| Battelle Pacific Northwest Laboratories | 1 |
| Bendix Corporation | 1 |
| Boeing Company | 2 |
| Burns & Roe | 1 |
| Catalytic, Inc. | 1 |
| Duquesne Light Company | 1 |
| E.I. DuPont De Nemours and Company | 1 |
| EG&G Idaho, Inc. | 2 |
| Energy Impact Assoc. | 1 |
| Exxon Nuclear Idaho Company, Inc. | 1 |
| Fenix & Scisson, Inc. (note b) | 1 |
| Fluor Engineers and Constructors, Inc. | 2 |
| Garrett Corporation | 1 |
| General Electric Company | 8 |
| Goodyear Aerospace Corporation | 2 |
| Goodyear Atomic Corporation | 1 |
| Hayes, Seay, Mattern and Mattern | 2 |
| Holmes & Harver, Inc. (note b) | 1 |
| Mason & Hanger--Silas Mason Company, Inc. | 1 |
| Monsanto Research Corporation | 1 |
| Morrison--Knudson Company, Inc. | 1 |
| NLO, Inc. | 1 |
| Norman Engineering Company | 1 |
| Reynolds Electrical and Engineering Company, Inc. (note b) | 1 |
| RMI Company | 1 |
| Rockwell Hanford Operations | 1 |
| Rockwell International | 10 |
| Ross Aviation | 1 |
| Stone and Webster | 2 |
| Teledyne | 1 |
| The Ralph M. Parsons Company | 1 |
| UNC Nuclear Industries, Inc. | 1 |
| Union Carbide | 2 |
| United Nuclear Corporation | 2 |

a/This information was provided by DOE's Office of Procurement and Assistance Management.

b/These contractors do not have the indemnity clause included in their contracts, but are covered through indemnity clauses of other contractors.

| Contractor | Number of contracts |
|---|---|
| University of California | 2 |
| University of Chicago | 1 |
| University of Puerto Rico | 1 |
| Vitro Engineering Company | 1 |
| Western Electric Company | 1 |
| Westinghouse Electric Corporation | 5 |
| Westinghouse Hanford Company | 1 |
| Total prime contracts | 75 |

APPENDIX III

## RECOMMENDED LEGISLATIVE LANGUAGE FOR PROVIDING FINANCIAL PROTECTION FROM ACCIDENTS AT DOE-CONTRACTOR OPERATIONS EQUAL TO THAT FOR LICENSED COMMERCIAL ACTIVITIES

If the Congress chooses to require DOE contractors to purchase private insurance, the second sentence of subsection 170 (d) of the Atomic Energy Act, as amended, could be amended to read:

> "In such agreements of indemnification, the Department of Energy shall require its contractors to provide and maintain financial protection from private sources, as defined by subsection (b), in the same amount as required of licensees under subsection (b) to cover public liability arising out of or in connection with the contractual activity * * *."

Should the Congress choose to increase the legal limit on Government indemnity, the second sentence of subsection 170 (d) of the act could be amended to read:

> "* * * and shall indemnify the persons indemnified against such claims above the amount of financial protection required, in the amount of $560,000,000 * * * provided further that if the amount of financial protection required of licensees under subsection (b) exceeds $560,000,000, the amount of indemnity, together with any financial protection required of the contractor, shall equal the amount of financial protection required of licensees under subsection (b) * * *."

If the Congress chooses to combine both approaches, it can use both suggested amendments and adjust the amounts.

To assure that the aggregate liability for contractor activities is equal to that for commercial activities, subsection 170 (e)(2) should be amended to read:

> "* * * if the amount of financial protection required of the licensee or contractor exceeds $60,000,000, such aggregate liability shall not exceed the sum of $560,000,000 or the amount of financial protection required of the licensee or contractor, whichever amount is greater * * *."

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

AUG 14 1981

Mr. J. Dexter Peach
Director, Energy and Minerals Division
U.S. General Accounting Office
441 G Street, N.W.
Washington, DC 20548

Dear Mr. Peach:

We have reviewed the subject draft GAO report entitled "Evaluation of the Price-Anderson Act As It Applies To Department of Energy Contractors." We find that the draft report offers from the NRC perspective, a factual analysis of the Price-Anderson Act as the Act relates to licensed facilities and offer only one specific factual comment. There are presently 73 not 72 operating reactors comprising the secondary retrospective premium layer.

GAO recommends that the legislative committees for DOE and NRC require both agencies to perform studies assessing the financial consequences of nuclear accidents that could occur at commercial facilities and government contract facilities. On this point, we refer to our letter of December 31, 1980, copy enclosed. In this letter the Commission stated that there are probabilistic risk analysis models which can be used to calculate the off-site consequences in the event of a nuclear plant accident. Further, the Commission discussed the various codes being used to calculate reactor accident consequences. We believe that the information contained in our earlier letter as well as any update to this information in the course of the Commission's continued use of probabilistic risk analysis, will provide Congress with a basis on which to determine whether to increase the liability limit.

Sincerely,

E. Kevin Cornell/for
William J. Dircks
Executive Director for
Operations

Enclosure:
NRC letter of December 31, 1980

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

CHAIRMAN

December 31, 1980

The Honorable Jack Brooks, Chairman
Committee on Government Operations
United States House of Representatives
Washington, D. C. 20515

Dear Mr. Chairman:

The August 18, 1980 GAO report entitled "Analysis of the Price-Anderson Act" (EMD-80-80) recommends that the Nuclear Regulatory Commission undertake technical studies to assist Congress in determining a realistic limitation on liability for nuclear accidents.

There are probabilistic risk analysis models which can be used to calculate the off-site consequences in the event of a nuclear plant accident. The Calculations of Reactor Accident Consequences (CRAC) code, from the 1975 Reactor Safety Study (WASH-1400), is used by the NRC staff to calculate reactor accident consequences, including early fatalities, early illnesses, latent cancers, and property damage. This code has been improved in some respects since 1975 and is continually being revised to incorporate improvements. For example, several computer codes, including CRAC, will be revised to reflect the lessons learned from the Three Mile Island accident and to incorporate recent research results. For a recent study, NUREG-0715, "Task Force Report on Interim Operation of Indian Point" (copy attached), the CRAC code was used to make risk comparisons of various reactor sites, reactor designs, and public protective measures.

In that comparison, off-site risks for six different reactor sites were estimated (see NUREG-0715, p. 17). The sites considered ranged from the Indian Point site, located in the most densely populated area, to the Diablo Canyon site, which is quite remote. The property damage estimates indicate that any accident which is serious enough to require evacuation of members of the general public is likely to cost \$10 to \$100 million. Accidents of this type have a calculated probability of about one in ten thousand per reactor year.

For lower probability accidents, the numbers are larger. As you know, these probabilistic estimates have wide ranges, depending on protective measures, design, sites, and uncertainties in the estimates (see NUREG-0715, p. 39). Thus for a probability of $10^{-6}$ per reactor year,

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the estimates for early fatalities range from none to 5,000. For a probability of $10^{-9}$, estimates of early fatalities range from 700 to 50,000. Similarly the estimates for early illness range from 10 to 10,000 for a probability of $7 \times 10^{-7}$ per reactor year and from 6,000 to 600,000 for a probability of $10^{-9}$. Latent cancer estimates range from none to 200 for a $10^{-6}$ probability and from 200 to 2,000 for a $10^{-9}$ probability. Property damage estimates range from $2 million to $2 billion for a probability of $10^{-6}$ per reactor year, and from $8 billion to $100 billion for a probability of $10^{-9}$ (in 1974 dollars). We have not estimated the monetary costs associated with early fatalities, early illnesses or latent cancers.

In addition to the substantial uncertainties inherent in this type of calculation, there is a suspected bias in the model for the property damage analyses which the staff believes tends to underestimate the potential costs. The model uses criteria for interdicting the use of contaminated property and assumptions for cleanup of contaminated property which may be optimistic with respect to costs.

The GAO report recommends that the Commission realistically define a limit of liability for the Price-Anderson Act. As the Acting Executive Director for Operations stated in his letter to GAO commenting on the draft report, since a decision to increase the liability limit must be made by Congress and not the Commission, the Commission believes it may be more appropriate for Congress to determine whether to increase the liability limit based on full consideration of the types of consequences which may occur following an accident (i.e., early fatalities, early illnesses, latent cancer, and property damage). However, the Commission believes that the statutorily prescribed limits of liability should be adjusted to account for inflation.

The GAO report also recommends that the Commission reassess the Federal government indemnity. The Commission believes that there is no objective source of information available to reassess this indemnity and that this is an area for the exercise of Congressional judgment.

Finally, in response to the recommendation that the Commission reassess the financial impact of increasing the present $5 million retrospective premium, I have attached a copy of a financial impact study completed by the staff last year which updates earlier information contained in a 1976 report prepared for the Commission by Dr. Ronald Melicher of the University of Colorado, NR-AIG-003, "Financial Implications of Retrospective Premium Assessments on Electric Utilities" (copy enclosed). This report assessed the financial impact of various retrospective premiums on representative utilities. The staff study provides additional information in this area as well as a sensitivity analysis of the impact of increasing the retrospective premium to $20 million per reactor. This type of

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review should be required for Congress in assessing the tradeoff between the costs of requiring additional protection through increased premiums and the costs of providing power. We do not present this study as definitive, since we are not experts in the financial management of utilities.

Sincerely,

John F. Ahearne

John F. Ahearne

Enclosures:
1. NUREG-0715, "Task Force Report on Interim Operation of Indian Point"
2. NR-AIG-003, "Financial Implications of Retrospective Premium Assessments on Electric Utilities"
3. Financial Impact Study

cc. Rep. Frank Horton

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COMMITTEE ON SCIENCE AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES
SUITE 2321 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, D.C. 20515
(202) 225-6371

May 21, 1981

Milton J. Socolar
Acting Comptroller General
of the United States
Washington, D.C. 20548

Dear Mr. Socolar:

I request that the GAO conduct a study on the number of Department of Energy contractors protected by the Price-Anderson Act. I would also ask that GAO render its opinion on the necessity for continuing such protection to government contractors relative to research and development facilities.

As you know, the Price-Anderson Act guarantees a fund of money to pay for damages, and limits liability, in the event of a nuclear accident. The Act, which is codified as Section 170 of the Atomic Energy Act, is most commonly thought of in terms of commercial nuclear power plants. For these plants, the Nuclear Regulatory Commission has authority to extend the protection of the Act to the utilities who own and operate them.

The Price-Anderson Act may also be used to protect the contractors operating DOE's research and development facilities. In this case, the Department of Energy has the authority to extend the protection of the Act.

A number of revisions to the Price-Anderson Act have been proposed for Congressional action. It is, therefore, important that the Committee fully understand the significance of the Price-Anderson Act to the operation of the government's research and development facilities.

It would be most helpful if we could receive your response by early July, 1981. The Subcommittee is planning a hearing on this subject in that time period and we would like to time the release of the report with the hearing.

If there are any questions on this request, please feel free to contact me or Mr. Louis Ventre, the Subcommittee counsel, on 225-2981.

Thank you for your cooperation on this request.

Sincerely,

Marilyn L. Bouquard

MARILYN LLOYD BOUQUARD
Chairman, Subcommittee on Energy
Research and Production

MLB:Vjs

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